NATURE MAGAZINE

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JULY
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AMERICAN NATURE ASSOCIATION
ACTIVITIES

ONE of the most popular bulletins issued by the American Nature Association was Bulletin Number 25 entitled *How to Form a Nature Club*. The available supply of this bulletin was rather quickly exhausted in response to individual requests from members, despite the fact that a considerable printing was made. It is felt that such a bulletin is valuable and that a second printing would be advisable. Before this is done, however, the editors would appreciate any suggestions from members relative to what might most usefully be included in such a pamphlet.

* * *

MANY of our members have an active amateur interest in wild life photography. Some of them have availed themselves of the privileges of membership by asking for advice on problems incident to this fascinating pastime. May we remind others that the Photographic Department of the American Nature Association will be delighted to give advice on cameras and the mechanics of wild life photography?

Cartoon by Gilbert Bundy of Winfield, Kansas, which wins one of the five honorable mention prizes in the Outdoor Good Manners Cartoon Contest

* * *

OUR LECTURE department is already booking lectures on Nature for the members of the lecture staff, including William L. Finley, Guy C. Caldwell and Howard H. Cleaves. Any organizations interested in Nature lectures for the season 1927–1928 should avail themselves of the services of the Extension Department, American Nature Association, Princeton, N. J.

* * *

NATIONAL notice has been given to the results of the American Nature Association's Outdoor Good Manners Cartoon Contest, so far as the professional class is concerned. Equal interest attaches to the results of the amateur contest, about which announcement will be made in the August issue. This contest has awakened a responsive chord in the hearts of lovers of the outdoors from coast to coast.

* * *

IN THE FALL the American Nature Association will publish the *Nature Almanac*, a publication unique in the Nature field. In it will be assembled data about Nature and Nature Study activities never before gathered between two covers. One important feature will be a national survey by states of the states of Nature Education and Nature interest in each state.

* * *

SO CONSIDERABLE was the interest aroused by the article and colored illustrations used in the January, 1927, issue presenting a Plea for Our Hawks, that a separate booklet comprising this material has been brought out. This pamphlet is available at cost in bulk or small lots for organizations interested in pleading the cause of the hawks. In instances where a sufficient number of copies are desired, a surprint on the booklet giving the name of the organization distributing it will be made on request. Four thousand copies have already been purchased in this way for distribution for educational purposes.

* * *

IN RESPONSE to the Association's appeal for war against the bagworm, many schools and organizations have done yeoman service. One of the first reports received comes from the Kansas City, Kansas, schools through Miss Lena Feighner. A four-week campaign netted 285 pounds of bagworms with an average of 2000 to the pound. A bagworm bonfire was held to celebrate the achievement.

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General Sir Robert Baden-Powell Founder of the Boy Scout Movement

The Late Sir H. Rider Haggard Novelist

T. P. O'Connor "Father of the House of Commons"

Judge Ben B. Lindsey Founder of Juvenile Court of Denver

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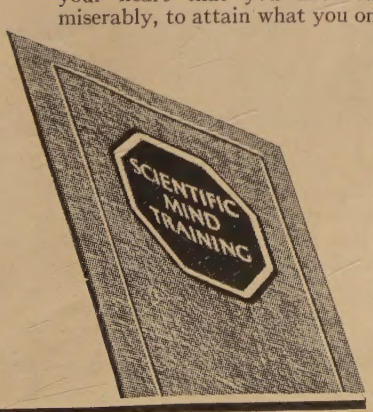
We will gladly send this book to you, free, if you are at all interested in Pelmanism. To ask for it involves you in no obligation whatsoever; you will not be bothered; no salesman will call on you. Send for this book now; when such distinguished people as those shown here advise you to take action, you do not try *to find out,* at least, whether Pelmanism can help you "find yourself"? Mail the coupon below—now, before you forget about it. THE PELMAN INSTITUTE OF AMERICA, 71 W. 45th St., Suite 1257, New York City. *Approved as a correspondence school under the laws of State of New York.*



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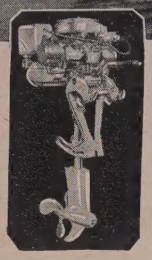

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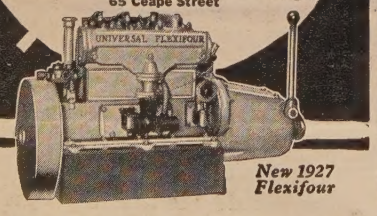

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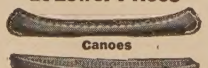
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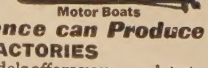
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In Your Own Backyard

Paul Griswold Howes of the Bruce Museum, Greenwich, Connecticut, has been on various expeditions of exploration, penetrating jungle depths and studying the wild life of Dominica among them. He has written many articles for *Nature Magazine* and needs no introduction to its readers. Mr. Howes, his journeys afield notwithstanding, finds the vicinity of his home in Greenwich fully as fascinating as faraway exploration. In proof of this he has written a book with the title *Backyard Exploration,* illustrated it with many of his excellent pictures, and, to top it off, Doubleday, Page and Company has printed it delightfully.

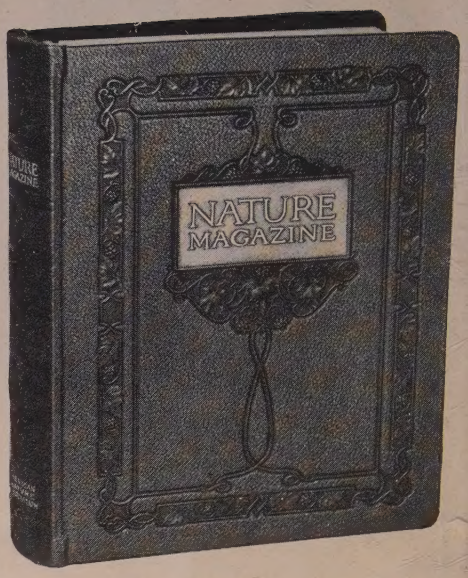
"To fill a gap in Nature literature and to illustrate the possibilities of exploration at home are the chief reasons for this book," Mr. Howes says. Reason enough, and Mr. Howes has amply justified his effort by the practical, concise and entertaining character of his volume. It will open many eyes to the wealth of fascinating Nature lore that resides within the limits of one's backyard and nearby fields. It is a large volume which with its profuse illustration accounts for its price of six dollars. R. W. W.

A Book on Bulbs

In *The Book of Bulbs* Frederick F. Rockwell has well achieved the threefold objective he set for himself. First, he has endeavored to show the reader the effects that can be obtained from bulbs as a part of the whole garden scheme; second, he has sought to bring to the attention of the beginner new bulbs and generally to increase interest in this fascinating group of plants; and, third, he has essayed to give brief but adequate advice on the cultural aspect of bulb growing. Mr. Rockwell is well known as a writer on gardens and in this book, which is published by MacMillan and sells for three dollars, he has accomplished his three fold aim in admirable fashion. Bulbous plants, possibly by virtue of the publicity given to them through embargos and quarantines, have advanced considerably in popular favor. This volume, then, is timely and a distinct aid to those who have a garden.

Language Oddities

Without knowing, we should say that the Rev. S. Ream of Lancaster, Ohio, had made it his lifetime hobby to collect and observe oddities in our language. In any event, he has assembled into a rather thick book under the title *Curiosities of the English Language* a collection of these oddities, now humorous, now illuminating. It is a peculiar book full of peculiar things and although it is more or less chaotically assembled, anywhere you open it you will find it entertaining. The author markets it himself at $2.25.



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NATURE MAGAZINE is published monthly by the American Nature Association
Entered as second-class matter May 31, 1927, at the post office at Washington, D.C. Additional entry at Greenwich, Conn.

South Africa Lures

To many South Africa may seem far away but with intrepid young Americans winging their way across the broad Atlantic distances are becoming of less and less significance. To the Nature lover South Africa offers much in flora and fauna. Wisely a special effort is being made to preserve the natural beauties and to make them available to visitors. This movement is brought out forcibly in *The Cape of Good Hope*, a booklet published by the Union of South Africa. This and other interesting material that will introduce you to South Africa can be obtained from the South African Government Tourist Bureau, 11 Broadway, New York City.

Our Contemporaries

Three months' observation of the family life of chimpanzees forms the basis of the leading article by Harold C. Bingham in the May issue of the *Journal of Mammalogy*, quarterly of the American Society of Mammalogists. The article is written from the scientific point of view but is equally of interest to the layman. In the same issue George Edwin Johnson presents observations of young prairie dogs born in captivity; Tappan Gregory writes on photographing beavers; S. I. Ognev discusses Russian bats; and H. P. K. Agersborg discusses the important question of *How May Our Large Mammals Be Protected.*

In the May-June issue of *The Condor*, bi-monthly magazine of the Cooper Ornithological Club, William Rowan contributes an interesting and practical article under the title of *An Alberta Aviary*. It might be called "A Poor Man's Aviary". H. H. Pittman writes on the *Black Terns of Saskatchewan*, and there are two articles on southern California birds. The usual interesting notes from field and study are included.

National Park Guides

Are you planning to visit one of the National Parks this summer? Thousands of people will throng these national playgrounds this year and to assist them the National Park Service has available bulletins on each of the National Parks. These are guidebooks to the points of interest, road guides for automobiles and include the various regulations of each park which every good citizen should know and observe. If you are going to a National Park this summer write to the National Park Service, Department of the Interior, Washington, D. C., for a guide to the park or parks you intend visiting.

For Mineralogists

Although it has apparently been in existence for a year, we have just seen a copy of a new quarterly devoted to a special field of science, that of mineralogy. The publication is entitled *Rocks and Minerals* and is published by Peter Zodac, 157 Wells Street, Peekskill, N. Y. Subscription is one dollar a year and single copies are thirty cents. No doubt some of our members with a special interest along this line will be interested in this publication.

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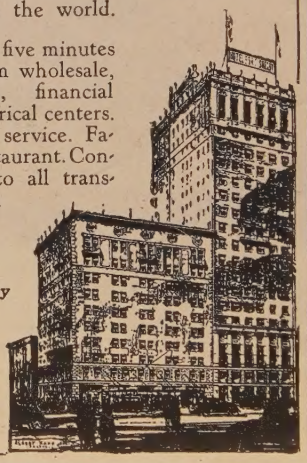

Plant Revelations

Sir Jagadis Chunder Bose has held the stethoscope to the heart of plant life and listened to its heart beats. As he says himself, "in pursuing investigations on the border regions of physics and physiology, I was amazed to find boundary lines vanish and points of contact emerge between the realms of the Living and Non-Living. Metals are found to respond to stimuli; they are subject to fatigue, stimulated by certain drugs and 'killed' by poisons." Which quotation gives an idea of what interesting data he has assembled in his first book written for the layman, *Plant Autographs and Their Revelations*. By the use of sensitive instruments he has evolved new theories and established new conclusions which must inevitably be of interest to anyone interested in science. In this volume, published by MacMillan and selling for $2.50, he makes report, most entertainingly and enlighteningly.

For the Teacher

The Unity of Life is the title H. W. Royston gives to a new Nature study book brought out by the World Book Company, Yonkers-on-the-Hudson, New York. It is a book designed for teachers and for parents and presents evolutionary biology as a guide to the proper understanding of life relationships. This volume contains much well-directed and excellent information, reinforcing training in observation with a clear presentation of fundamental biological principles. The book is well illustrated and well written and worth its list price of two dollars.

Community Improvement

Women's Clubs, public organizations of various kinds and individuals should find *Civic Improvement in Your Town*, published by the American Civic Association, Union Trust Building, Washington, D. C., a distinctly valuable booklet. The pamphlet, which sells for fifty cents, is written by Harlean James and, as the title suggests, gives a program and plan of procedure looking to civic improvement.

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July

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July

Questions and Answers

The American Nature Association will be glad to answer each month such questions as its members ask about Nature.

QUESTION: *Do normal healthy tear-drops contain living animals?—C. F. L.*

ANSWER: We can not learn that healthy tears contain animal life. In a pathological condition, of course, they would contain microbes. It is extremely rare for the Lachrimal gland to be the seat of disease.

QUESTION: *What is the Rhodora of Emerson's poem by that name?—A. B.*

ANSWER: The Rhodora of Emerson's poem is *Rhodora canadensis*. It has rose-colored or purple flowers, grows in wet places, and blooms early before the leaves are expanded.

QUESTION: *When do the Orb-web spider's eggs hatch?— F. V. H.*

ANSWER: The eggs of the orb weavers usually hatch in Autumn, and the young remain in the cocoon through the winter.

QUESTION: *Does the banded armadillo draw its head back out of danger as a turtle does? If not, how does it protect itself?— O. M.*

ANSWER: The armadillo does not have the power to retract its head, but protects itself by placing its head and limbs underneath, and then curls itself into a ball when it is quite effectually protected by its armored shell.

QUESTION: *Recently I saw a Brewer's Blackbird with a white feather in its tail. How do you account for that?—D. K.*

ANSWER: This was a case of partial albinism which is not unfrequent in birds. It is due to lack of pigment in the skin, sometimes affecting a single feather only, or in all degrees up to complete albinism. An injury sometimes causes this, or the condition may be inherent in the bird's constitution.

QUESTION: *Is the skunk an enemy of the rat: Are both likely to be found breeding under the same shed or in the same place?— D. R. H.*

ANSWER: A skunk would certainly capture and eat a rat or its young if possible. But probably the rat is usually too quick for the skunk, and also it can find refuge in smaller holes, so both might live beneath the same building.

QUESTION: *Are great-crested flycatchers common in Canada?—E. A. W.*

ANSWER: The great-crested flycatcher is fairly common in southern Ontario.

QUESTION: *Please tell me the name of the drug in cocoa and chocolate.—M. M.*

ANSWER: Theobromine, a crystalline alkaloid, volatile and very bitter, is found in the seeds of cacao. It is similar to theine or caffein, all three differing only slightly in chemical composition.

ALL the pages of this magazine couldn't begin to tell you the sheer joy of owning a Super Elto! The glorious adventures of cruising! The happy jaunts to the finest fishing grounds! The keen thrill of foaming, slicing speed!

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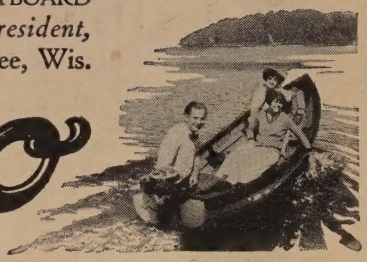

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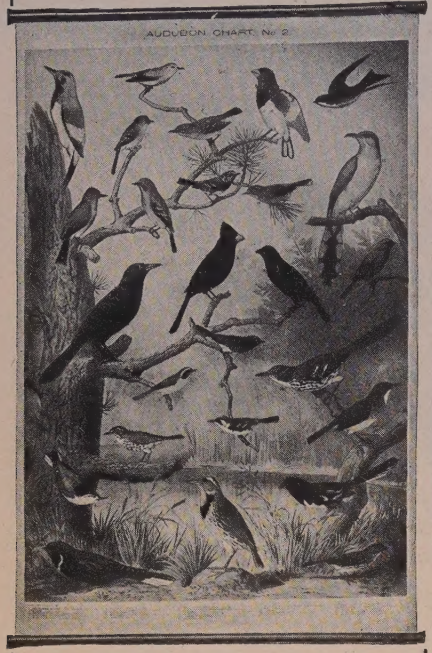

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QUESTION: *I have seen granite in Norway that I am almost sure contains the imprint of a prehistoric man's foot. Can you tell me the geologic age at which this probably occurred?—J. K. E.*

ANSWER: Granite is one of the oldest rocks known, so old that most palæontologists contend that no fossils have ever been detected in it. It is scarcely possible therefore for any tracks of man, or other creature, to have been imprinted in it. Tracks of prehistoric creatures are of course relatively common in sedimentary rocks.

QUESTION: *Does the Monarch butterfly migrate?—J. H. N.*

ANSWER: Yes, the Monarch butterfly migrates southward each fall by thousands. The individuals that go South do not come back, but their descendents have several broods the next summer and each brood works northward part way, and thus the species reoccupies the territory.

QUESTION: *I would like to know what bird is most valuable in keeping down the number of sparrows.—M. J.*

ANSWER: We do not believe any particular bird is responsible for keeping down the number of sparrows. Screech owls undoubtedly catch many, and the bird hawks like the sharp-shinned hawk get a few. Probably, however, the food supply, and the cold of winter are the two factors which limit the sparrows' number.

QUESTION: *Please tell me if the Luna moth is injurious, and if so, in what way?—L. L. E.*

ANSWER: Our large moths are all harmless in the adult stage, as they eat practically nothing, in fact, in some the mouth parts are nonfunctional. In the caterpillar stage they eat the leaves of various trees, and if they had no enemies would be excessively injurious. However, they have so many enemies, principally birds and parasites, that they seldom become abundant enough to do any appreciable damage.

QUESTION: *I found in a fir tree in a swamp a nest about one foot three inches long and seven inches high, with a hole in the end about one and one-half inches in diameter. It was about twelve feet from the ground and about four feet from the trunk, and was made entirely of moss. Could you tell me what made it?—D. A. W.*

ANSWER: The nest probably was that of a flying squirrel. They frequently build in such a manner and sometimes have two entrances on opposite sides. Red squirrels also build a similar nest, but usually a larger one.

QUESTION: *Are trees or plants divided into sexes like male and female, and, if so, how can they be distinguished?—P. S.*

ANSWER: In the perfect flower the male element (stamens) and the female element (pistil) occur in the same flower. In many, however, the male and female elements occur in separate flowers. If on the same plant, as in the hickory, the species is called monoecious; if on different plants, as in the willow, it is called dioecious. They can be distinguished only by studying the structure of the flowers, as the general appearance of the trees bearing the two kinds of flowers is the same.

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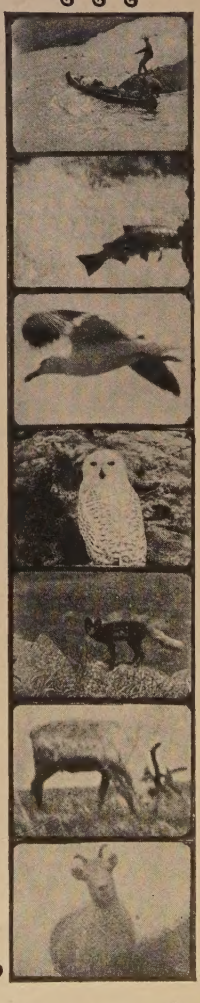

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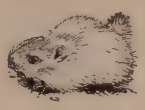
NATURE CALENDAR

JULY

by E. Laurence Palmer

THE DECLARATION of Independence was signed on July Fourth a number of years ago and ever since we have been becoming more and more dependent upon each other and less dependent upon ourselves as individuals. We pay guides and teachers to show us things which we could experience through the exercise of our own senses. We buy books written about things in our gardens because we have lost the ability to get these experiences for ourselves. Our food and clothing is prepared by expensive processes while we pass up some of the simpler things near at hand.

I should not want to go back to the primitive life entirely but there are certain types of independence which our ancestors had which are worthy of preservation. It is natural that living things desire a certain independence and it might be appropriate to look for this sort of thing in July.



Young woodchucks are beginning to shift for themselves in this month. You see them independent of parental care as you drive down the roads. Many sacrifice their lives because they are not ready for the complete liberty which they take upon themselves to enjoy.

Young birds of many species may have begun to shift for themselves though many wisely avail themselves of the care of their parents. Sometimes the young do this to such an extent that we wonder why the adults don't declare their own independence and let the larger, fatter young shift for themselves.

Most insects are "on their own" from the beginning though ants, bees and some of their kin care for and fight for their young. One might assume no doubt with danger that young bees and ants might possibly learn from the adults in some cases. But with most insects this is impossible since their adult relatives were dead before they were themselves hatched, or if this is not the case they were abandoned by the parents before the egg was hatched.

One of the most marvelous things of Nature to be seen in July concerns itself with those wasps which provide the next generation with a food supply of creatures which they paralyze with their stings. Frequently this can only be done with danger to the attacking wasp and requires great precision which cannot safely be learned through experience. Watch wasps this July to see if you cannot "sit in on" some of these experiences. Don't try to sit on the wasps, of course.

Thoreau, whom we think of frequently because of his writings about winter, was born in July. Later he made a declaration of independence of his own and spent a number of years "living off the country". His experiences as set forth in "Walden" can be profitably read by any who wish to get away from civilization in July. When he tells us that his food for eight months cost him eight dollars and seventy-four cents we wonder why home economics colleges do not require their students to read Thoreau. But putting that aside, "Walden" can profitably be read before, during and after any Nature experience you may undertake in July.

Thoreau tells us that the purslane which grows in our gardens, if boiled and salted, makes a perfectly good meal. Have you tried it? He says that it has a better taste if you call it by its scientific name *Portulaca oleracea*. The plant is that sprawly, succulent, reddish-green weed that grows in most gardens and breaks apart only too easily when you attempt to grub it out.

We cannot help but think of ponds in connection with Thoreau and ponds are probably more interesting in July than in any other month. In the drier parts of the country many of them are drying up and the inhabitants are making strenuous efforts to adjust themselves to the dry era. Even where this is not the case, however, we find many kinds of frogs abandoning the tadpole stage and the pond in which they spent it and beginning to make their way over dry land. The tale goes that they shed their tadpole tails but a partly transformed leopard frog may show you in a few days that this is not so.

Look this month of July then for declarations of independence from all forms of Nature. Many forms must make such a declaration or die. Others unless they accept dependence would die. And so Nature offers us a great variety of viewpoints. Isn't this fortunate?

THE CALIFORNIA CONDOR

NATURE MAGAZINE

Vol. X No. 1 July 1927

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SEVEN FACES of FEAR

by Dallas Lore Sharp

SEVEN FACES OF FEAR is the first of several articles by Dallas Lore Sharp, who needs no introduction to Nature lovers. The painting of the Condor, which so effectively expresses the spirit of the wild, is by our artist, R. Bruce Horsfall.

WHAT is wildness? Time and place have much to do with the answer. In the southwestern desert it is one thing, but a very different thing at sea. Night cloaks herself in wildness that the tame day never wears. A winter storm over the Dakotas, an autumnal gale across the Caribbean, a drouth upon the midwest corn lands, a fog blotting out the shore lights of the Atlantic, are all answers to the question—all shapes of wildness and different faces of fear. It would be a vital loss should science so far conquer Nature as to slay these elemental monsters, robbing land and sea of their terror, and us of our ancient fears.

It is not unlikely to happen. For multitudes within the walls of cities it has already happened. Housed, heated, lighted, nourished, clothed, educated, entertained and employed by science, they breathe involuntarily, and never come to grips with Nature until they come to die. How seldom any of us stand face to face with her in any of her wild places and fearful moods!

The universal, and regularly recurring, face of night is the wildest aspect of Nature that most of us see. Is it because I am more at home in the open country under the moon and stars, that night in the deserted, early morning streets of the city seems wilder than anywhere else to me? But here in the hills, as dark comes on, I seem to change as much as the objects about me; and they change almost out of recognition: shapes alter, relations shift, proportions vary, lines melt, perspectives merge, planes and perpendiculars flow together through the soft shadows or plunge over into the close black abyss. All of the landscape is a stage at night, and every humdrum creature drops his daytime mask and moves before the footlights in his instinctive rôle, whether as hunter or hunted.

THE WILDNESS OF NIGHT
Then every humdrum creature drops his daytime mask

And something natural and instinctive marks my part in the play. One is quick to take a cue from fear. But we have outgrown our fear of the dark. I love the night; and wish I had the eyes of the cat that I might prowl with the shadows. I wish I had her padded feet. "As the shades begin to gather around us, our primeval instincts are aroused, and we steal forth from our lairs, like the inhabitants of the jungle, in search of those silent and brooding thoughts which are the natural prey of the intellect."

I am not afraid; I feel afraid only as an earlier, hairier self, forced to hide from the daylight, comes out of its burrow in the dark. I know too much to be afraid; but instinct preceded knowledge, and the hair follicles were finished before the lobes of my brain. What else means the erectile hair on my body, and the exquisite play of nerves when something brushes past me in the dark? What bares the skin by patches under my shirt at close unwonted sounds in the night?

I go forward on two feet at night, erect like a man, but ready to drop on all fours instantly, ears pricked, teeth bare, every bristle stiff along my back. Time and

again I have caught myself listening in the deep of the night with breath held, foot or hand suspended, every muscle tense, more wild than civilized, more animal than man. There is nothing to harm me, unless it is the kindly stars. But there used to be. And it used to come in the night. And the old fear is strong when night steals upon me and I am face to face with the dark.

Years ago a lion-tamer with a number of trained beasts was a well-known showman in Boston. The animals did their tricks in a cage which was quickly fabricated on the theatre stage. Here in the blaze of the footlights, before the applauding crowds, the half-dazed creatures went through their stupid, unnatural motions at the crack of the trainer's whip. The show left Boston on its usual round, and one night, in a distant town, the glaring lights suddenly winked out, leaving the theater in pitch dark, jungle dark; and in that instant the jungle turned and did its wild work. The darkness struck terror into the heart of the trainer. But the same darkness was light to the lions. It struck their hearts with courage, and gave them their revenge.

IN THE DESERT THE EYE OF NOON WAVERS NOT
But evening dyes the substance of the soul with tints of the desert dusk that do not fade

"Thou makest darkness, and it is night; wherein all the beasts of the forest do creep forth. The sun ariseth, they gather themselves together and lay them down in their dens. Man goeth forth to his work and to his labor until the evening."

The beasts of the forest do creep forth. The face of the forest, next to the face of night, is most associated in our minds with wildness and fear. And not the less real for being, with many of us, a literary association. Books are full of forests. And the forests are full of lairs and dens and caves. And the caves are full of dragons, and good outlaws like Robin Hood, and Indians like Uncas, scouts like Leatherstocking, Babes like those who were lost in the woods, and wolf-children like Mowgli. But there is many a man between New York and Los Angeles who has known these imaginative forests and these denizens in them since his earliest childhood, who has never seen a piece of old growth timber, never passed within the shadow of a great stretch of woods.

On the whole the forests that I know are wilder than any of those I read about in books. In the highest noonday hour of the deep woods there is a spirit of wildness, a sense of something watching that you cannot see. I love the trees. Only a few times have I ever experienced actual fright within their borders; and never any sudden, shocking terror. One might live always conscious of having intruded, of being disbarred and suspected, spied upon and followed in the woods, without ever being attacked. Except for the madness which seizes one who is lost, the stir along one's nerves in the woods is indescribably exhilarating, sharpening the senses as the open country does not seem to do. It is nothing that one cultivates. It cannot be eradicated, nor brought wholly under control. It is a spell, something laid upon one; another ancestral memory call it, the indistinct shape of an immemorial forest-fear.

I have never been in the big woods with a man, either a guide or the greenest tenderfoot, whose mood did not manifest many of the symptoms of forest-fear. Passing from the open sky and the water of a lake into the silence and umbrage of the great trees, what man of a party does not instinctively hush his talk and begin to listen? He peers about expectantly, pauses, picks his steps as if suddenly afraid of brittle twigs in his path, becomes alert, and shows other lesser signs of having been wild once and of being still afraid. And in his heart he is afraid. An older fear than he wots of has stolen out of the circling shadows and entered into him.

An indifferent, conventional, garrulous guide to the woods, such as one finds to historic places and galleries, may exist, possibly, but he is a rare animal. If you insist on tall stories I have known guides who would tell them to you,—side-hill gouger stories to keep you tossing on your bed of balsam boughs. There is no set story, however, to tell in the woods. Nothing predictable for your guide to recite. You are verging always on discovery, ever in expectancy, a hint of something happening behind every bole and in every stirring breeze. But you must wait. The wiser one is in the way of the woods, the silenter is one's tongue, the softer one's foot, the keener one's eye, the more aware is one's spirit and manner.

Of what is forest-fear compounded? What is the wild face that the forest wears? Penetrate the jungle of the Suriname and listen at night to the beating of the tomtoms trying to scare the creeping thing away. It is not the roar of the leopard that the drumming Bush-negro fears. It is not the howl of the red baboons, nor the maddening clatter of the tree frogs and the insects, nor the blackness of the forest and the overpowering height of the trees. It is not the looping, tangling vine of the liana, though that, more than any other thing incarnates the jungle. For all of these the negro has some conquering magic. These are things. The jungle is not a thing; it is a mood, an unvarying, devastating, inescapable mood, which only the weird rhythms of the throbbing tomtom can keep at bay.

So with our kindlier, opener, less mysterious woods. One may love no sight of Nature more than the grave, inscrutable face of the forest, yet find it impossible to shake off an undefinable fear of something alien in the eyes of the sunniest glade. The deeper in one goes the more certain he becomes of being followed. Turn in your tracks and the thing circles about you. Begin to circle

after it and you are lost. Stop where you are. The guide will find you. Once you are lost in the forest you shall come face to face with wildness which has driven men mad with fear.

Far better known than the face of the forest, almost as well known as the face of the night, is the wild countenance of the storm. We can level the forest; we can scatter the darkness; but who can clip the wings of the wind? Nothing in Nature can approach them for wildness. It is upon the wings of the winds that the fiercest moods of Nature fly abroad. Writhing across Florida from the Caribbean, twisting through Kansas from some superheated prairie, howling over the Great Lakes from the tundras and plains of the Arctic, what is there on land or sea so terrifying as the blizzard, the tornado and the hurricane? The earthquake, the belching volcano, and the sizzling thunder storm are fit companions for the great winds. Unbound and blowing where they list, shall they ever be bridled so long as there is a leaf to flutter, or a wave to rise, or a cloud to scud across the sky? They are the wild horses of Heaven, harnessed to the chariot of the Most High.

JAMES W. MARTEN

FOREST-FEAR IS INSTINCTIVE

There man grows silent, on guard, afraid in the wild face of the forest

One of our modern scientists, whose life has been a battle with the molecule, who has shattered its minions, scattered them, and watched them reform into new unbeaten lines, ties all human knowledge into a white flag and parleys with the fierce unconquerable forces at the heart of Nature for a truce. Wonder at Nature? he cries. Yes. Fear her? Yes. Love her? Never! Human life has been a deadly struggle with Nature from the beginning, and ever shall be. At any moment she may turn and wipe the human race from off the surface of the globe.

JAMES W. MARTEN

NATURE UNLEASHES THE STORM

And thus she shows herself in all her elemental strength and fury, defying man

It is wholesome for us occasionally to feel this terror of the scientist; to drive Nature into the laboratory, and there to corner an ion and be cornered by it, until, the battle drawn, we thereafter with undaunted spirit face an undaunted foe. But life has prevailed, the forces working against it weaker than those in its behalf. The face we look out upon in Nature is a friendly face, so calm, and so much of it reflecting the controlling mind of man as never to be seen by thousands of us in its fiercer, darker moods, when it is often more interesting.

That is not true, however, of the desert. The dweller there, and the traveler knows that noon upon the desert has an eye under which every living thing must quail.

"Tiger, tiger, burning bright
In the forests of the night,
What immortal hand or eye
Could frame thy fearful symmetry?

In what distant deeps or skies
Burnt the fire of thine eyes?
On what wings dare he aspire?
What the hand dare seize the fire?"

Many a hand in the depths of the jungle has seized that fire. The eye of the great jungle cat wavers before the steady eye of man. But not the eye of noon in the desert. It is heated seven times hotter than the eye of the tiger, blazing with a hard white light that sears and shrivels—until the approach of evening. Then the scene changes. The very nature and being of the desert changes. The burning, blinding light is gone, and in its place is the twilight and such a flooding over from rimrock and mesa and canyon walls of purples, saffrons, umbers and soft lilac grays, as to dye the substance of the soul unfadingly with the tints of the desert dusk, making it unfit after that for Heaven, if Heaven requires a stainless soul.

There is nothing greener in all the range of Nature than a field of young alfalfa in a wide frame of desert sand and rabbit brush and sage. Down the irrigation ditch come running the colors of life—green and purple of alfalfa, the drifted white of cotton and apricots in bloom, cool gray orchards of walnut, and cooler, darker ones of orange and lemon, with roofs of houses showing through the lustrous shade. Let us build Bowlder Dam in the Colorado and dot the mesa with more roofs and orchards, leaving the buttes their wild empty background, and the giant, uplifted suhuaro, the vengeful cholla, and the ocotillo, stranger than Aaron's rod, room and verge enough. Who, after all, shall water the walls north of the Gila or plow the lava plains south of it to the border? Dawn and dusk shall have easels for their canvas on the desert as long as

night alternates with day. And every tawny noon shall see the tiger of the desert, with red eyes and dusty tongue, licking up the shadow of the traveler who leaves the shelter of the mesquite and the palo verde and dares the open country of the sun.

What is wildness? It is the untouched, untamed spirit of Nature acting upon the spirit of man. Out of his primitive fears has come much of his invention, his art, and his religion. So long as his ancient fears live within him, so long shall he continue to acquire new skills, create new forms of beauty, and catch glimpses of the face of God.

THE WAVE PACES THE FACE OF THE DEEP

Ten thousand fleets of churning propellers will never subdue the Atlantic

Who is it but God that walks among the mountains? Whose image and superscription do the mountains wear? We have threaded them, tunneled them, scaled them, and now we fly above them, but we shall never conquer their aloof and unapproachable spirit, nor stand except uncovered in their presence, our worship both of awe and wonder, and not more of exaltation than of profoundest fear.

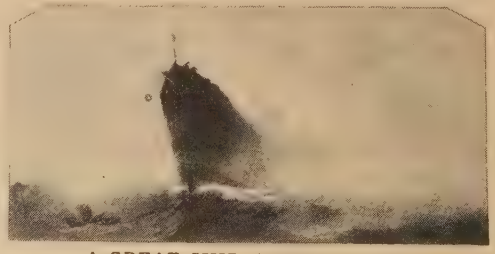
Next to the expanse and mystery of the ocean, for most of us, probably, stand the craggy heights of mountains for wildness, far-off adventure beckoning over one, the freedom of high-circling wings the lure of the other. Standing beneath the cottonwoods at Lone Pine and looking up at the icy pinnacle of Mount Whitney, more than fourteen thousand feet over you in clear California sky, you are more than aware that you are seeing more than you can feel and understand. A head of supernal and commanding beauty is upreared into the azure heaven, but in its countenance is a spirit most fearfully wild. The most gloriously wild thing I ever looked upon, perhaps, and the least convincing, was the peak of Whitney, in a strange Alpine light one morning an hour before the summer dawn. The pale stars were still upon it, and around it at a respectful distance in the faintly lighted court of heaven a company of attendant clouds.

One clear day some years ago I climbed to top of Mount Hood in Oregon and looked out and down over a wilder world than I shall probably ever see from a single position again. I was only a little more than eleven thousand feet above the sea, but the quality of the light, the situation of Hood and its acute peak, conspired to impress me with the untameable spirit of the mountains.

From the mighty flanks of Shasta away in the south to the glacier-rifled cone of Rainier as far away in the north I stood in the midst of mountains. The smoke of forest fires rose here and there out of the depths, but not in volume enough to smudge the sky. Yonder a gray blotch marked the city of Portland, a wavering channel the valley of the Willamette—the works and ways of men mere dots and dashes, a kind of human shorthand upon the titanic scene. I could look out and away and stand firm upon my feet, but I could not look down, not down the snow cone for eighteen hundred feet immediately below me, as down the sharpened point of a pencil; nor on down the glacier below the cone thousands of feet farther to timberline and the forests, and still on down. Here was wildness more than either my head or my heart could endure, and more than all the hands of man can ever tame.

There are millions of acres of such wild heights already in reservation among the states. Timbered, watered, lifted into giant range and inviolate peak, they shall offer a lair to wildness as long as the land endures. Combined within the walls of the Rockies, the Cascades, the Sierras and the Coast Range there is more varied, more constant, more accessible wildness for us than in all other lairs and dens together, except in the dark, recurring den of the night.

I said the mountains for wildness stand next to the expanse and mystery of the sea. Life can never become wholly tame so long as we go down to the sea in ships, even in our leviathan steamships; and Solomon, in all of his regal tameness, was not so tame as one of these. Ten thousand fleets of churning propellers will never subdue the Atlantic. The smooth keels of ships will never iron out his wrath, nor all of their soft curved breasts be able to gentle him. Neither compass nor helm has taught him to regard the course of man. Savager than the caged lions, he paces back and forth against the bars from Cape Farewell to the outthrust Horn, forever



A GREAT SHIP GROPES IN FOG

There is no wilder, more inscrutable face of fear than this

brooding his great wrath against the outflung shore.

The other wild face of Nature that looks in upon us is that of the fog; and it happens to be staring in at my window this February day. Since last night the thermometer jumped from ten above zero to forty-five. The earth is breathing heavily as if waking from an all but lethal sleep. Now in sheets, now in slowly rolling billows that break upon the steaming hills, drifts the tide northward leaving me shut in my house as in some diving bell at the bottom of the sea. I can make nothing of the prospect from my window. The pointed cedars in the yard fade and waver back into faint blotches as giant fronds of sea weed might beneath a slowly heaving tide. And in the smother and muffle of the deep I hear far-off the wail of sirens, and the low, long halloos of ocean liners feeling blindly through the dark.

I must have had many forebears lost at sea. The sounds of boats and sea fowl and the sad, monotonous clang of the bell buoy are all the voices of the fog to me, and all associated with some dread ancestral woe. The sunlit earth has sunk. The sky has been blotted out. Every beacon along Boston Harbor has been extinguished, every channel mark and buoy, except the mournful bell buoy, like some lost sea mew ceaselessly riding the waves. So the great liners, their propellers scarcely turning, grope their way through the dank, gray gloom, the faces of their pilots as gray as the gloom.

As a child I knew the taste of oakum and tarred rigging, and the sight of flags at half mast, and the sound of surf along the shore. For me Nature wears no wilder, more sinister face than the eyeless face of the fog. To drift in an open boat through the smother in the path of ocean-going craft is the essence of all anxieties, and to see, through the gray curtain looming over you the cut water of a towering ship is the sum of all terrors,—unless it is the looming of the iceberg dead ahead, the shock in mid-ocean, the fog wrapping you and the ship in a common shroud.

Science has laid many a specter low; common sense has done for many a superstition; and our stolid materialism cleared many a cave of goblins, many a grove of dryads, many a mountain top of divinities, and all of the skies and stellar spaces of heavens and hells. Science may in time interpret all dreams, reveal to us all secrets, and give all power over Nature into our hands. But the fog defies science, and wears a fiercer, wilder face because of it. Tomorrow it may drift away and vanish as mysteriously as it came. But yesterday a great ship crawled back to port with a gap in her starboard bow, the toll of the fog.

Fire-Flies or Lightning-Bugs

Wonderful and beautiful are these little creatures of the night with their power to diffuse light. Sparkling like gems among the grasses of the marsh, flashing here and there along the forest's dark edge and over the dusky meadows, we see them when the mantle of night's uncertainty is over all. Illuminating the summer night with myriads of flashes they have made their name, like the names of popular persons and things displayed on flashing electric signs, a familiar term all over the world. They possess a light-giving apparatus that forms substances nearly resembling that formidable element, fire, and yet wholly destitute of its dangerous properties; and we wonder? This light-giving organ is usually situated just inside of the lower wall at the terminal end of the insect's body; it was supposed by many students to be a slow combustion process of the fatty tissue and oxygen supplied through certain air tubes. Later observations tend to prove that it is caused by a "sort of digestive process which involves a special material secreted by the organism and a special enzyme that works upon it," furnishing the curious phosphorescent-like glow that has made them so noticeable. It is thought that this light in addition to being a protective measure, is a means of bringing the sexes together.

CORNELIA CLARKE

TORCH-BEARERS OF THE NIGHT

Bird's eye and worm's eye view of the lightning-bug or fire-fly, which is neither bug nor fly, but a true beetle

Fire-flies or lightning-bugs are neither flies nor bugs, but they are true beetles belonging to the family *Lampyridae,* meaning "to shine." They are known to most persons, at least in their adult or winged state. Most of them are night prowlers, and during the daylight they are sluggish and inactive, usually concealed in some dark habitat. They are soft-bodied beetles of medium and small size, with slender bodies and sawlike antennae. The front part of the thorax is expanded into a thin margin, which in most cases forms a protective covering for the head.

The larvae are active creatures that live in the ground and, like the adults, feed upon soft-bodied insects found in decaying logs and similar food.

DEVASTATION
Ruin left in wake of the coiled rose worm

COILED ROSE WORM
That is what is curled up on the leaf

H. ARMSTRONG ROBERTS

FULLER'S BEETLE
This is one of the eaters in the garden

LACE-MAKING
What the European rose slug does to leaves

Some *Uninvited* Garden Guests

Intimate Glances at Visitors Not on the Social Lists

by William Atherton DuPuy

It is unfortunate that one should find so many visitors who have not been bidden when he goes out into that flower garden kept for purposes of personal gratification and for giving parties in the summer time. It jars on the sort of sensibilities that lead one to plant a garden to find that these intruders seem so intent upon one thing—a materialistic determination to fill their stomachs. Naturally, since such individuals are present, they have had to crash the gate.

And they could not be here for a direr purpose if they had come by means of a Trojan horse. They have come to destroy this garden. They are members of the insect hordes that are man's worst enemies. There is war between man and these insects for world supremacy.

A STINGER

That is this caterpillar's method of defense

These visitors, it seems, occupied with the call of the inner insect, divide themselves into two principal groups—eaters and drinkers. One of these dangerous groups eat but drinks only incidentally. The other drinks but does not eat.

Caterpillars, some of which are the greedy children of moths and butterflies, gnaw at the plants grown in the garden. They are among the eaters. Aphids, including the Lilliputians dwelling on the tips of the rose bushes, live by drinking alone. This does not mean, of course, that all that eat are caterpillars and all that drink aphids. Both armies, like that of Napoleon, march on their stomachs. It is by knowing their eating habits that one may combat them.

The fat, green caterpillar with the horn on his tail, gorging there on the peony bush, the yellow woolly-bear caterpillar among the chrysanthemum leaves, the stinging rose caterpillar, the marvelous fellow with the saddle back, are all eating against the time when they will be called upon to take part in one of Nature's most impressive miracles. Possibly we might take a look behind the scenes.

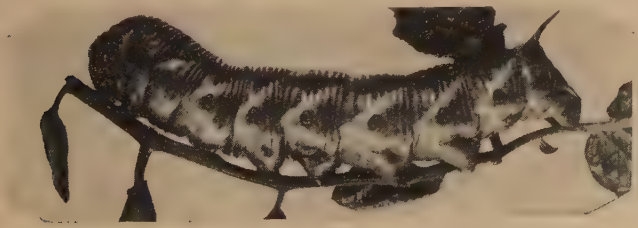
The moths and butterflies are cousins in the scalewing family. The scales come off on your hand when you catch one of these cousins. They are put on like shingles on a roof, often in fancy mosaics. These greedy caterpillars all come from eggs laid by either moths or butterflies. In many cases even the scientists have difficulty in deciding whether a caterpillar is to be a moth or a butterfly when it grows up.

The chief difference in habit between moths and butterflies is the fact that with one of them most work during the day shift and with the other most work the night shift. The chief difference in form is the way most of them wear the wings. Most butterflies put the wings on as shutters are put on a window. They are worked back and forth like shutters. Most moths, on the contrary, fold the wings up like fans and lay them down on the back.

Neither moths nor butterflies feed to any great extent as adults. The winged state constitutes their day of glory and of mating. They sip a bit of nectar from a flower here and there but this is by no means a serious attempt at food getting. They could quite well get along without any food at all.

The eating of a lifetime is done in the caterpillar stage. Most of the caterpillars are leaf feeders. They may come frankly out in the open to do their eating and anybody who does not like it can go do whatever he wants to about it. To be sure many are not so cocky. They come into your garden in one guise or another and may quite eat it up if you allow them to. But you can see them changing your leaves into lace or shreds and stop it if you know how.

Caterpillars eat leaves much as a horse eats hay. So do a great many other insects, beetles, for instance, and grasshoppers. One would not have to think very hard to conclude that the proper way to get rid of them is to put poison in their food. To find the easiest and cheapest way to poison them, however, is a longer job. The Department of Agriculture has worked on it for many years and has the answer ready for whoever asks for it.



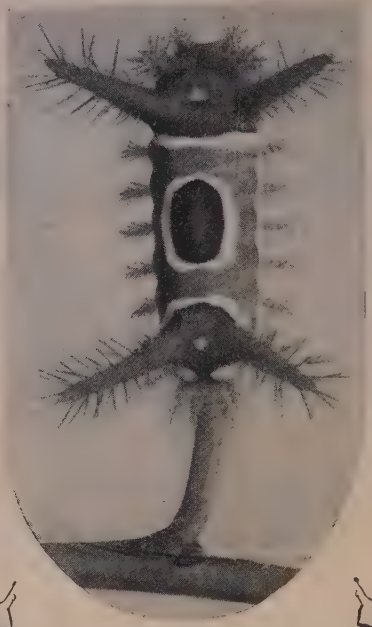
THE FAT AND GREEDY HORNWORM

This is one of the busiest of the leaf eaters who invade the garden

A GARDEN VISITOR, THE SLUG

Not, to be sure, an insect, but a night prowler who likes lettuce

A BUTTERFLY SOME DAY
This pretty caterpillar is to become a swallow-tailed butterfly



THE SADDLEBACK
This fellow is one of the most fantastic

LIKE MILADY'S SUMMER FUR
This garden invader is known as the woolly-bear caterpillar

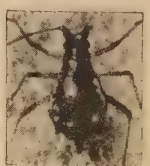
Arsenate of lead is a cheap and handy poison. If one buys a pound of it he has but to put it in 50 gallons of water to have a great quantity of poison in usable form. If the water is first made soapy it clings better and the mixture is improved. Then he can if he gets hold of one of the many types of spraying machines quite drench a big garden. Or if he has but a few plants he can put three spoonsful of the poison in a gallon of soapy water and effectively spray them.

The water of the spray covers the surface of the leaves and evaporates. The poison remains as a coating. The insect eats it and dies. Such is the fundamental principle for fighting the eaters among the unwelcome garden visitors. More detailed information can be secured by writing to the Department of Agriculture and asking for Farmers' Bulletin No. 1495. It is free.

But if this caterpillar is allowed to go the way of Nature it eats its weight in leaf tissue day after day and grows. Eating seems to be its sole mission in life. This it does dumbly, with no obvious idea in mind. Yet viewed from the standpoint of the result, consider the marvel that has been performed.

A time comes when the caterpillar has laid up in itself the materials it will need in performing its purpose. It has become a fat bag of leaf juice derivatives. It will show the world that has thought it stupid what it can do with this raw material.

It may change some of this leaf juice into silk and weave itself a cocoon, or it may retire without any bed covers in spite of the cold. It goes into the pupa stage for a long sleep. As it sleeps, it begins to shape itself into new forms. The creature within abandons the wormlike conformation of the infant and develops a chest to which are attached the six legs that are the trade mark of all adult insects. It evolves from its caterpillar eyes, those moth or butterfly eyes of, possibly, 10,000 lenses with which it can see as far as four feet. Sensitive antennae that can, possibly by the sense of smell, locate its mate half a mile away are also developed at this time. It fabricates those marvelous wings, each kind working out the design that is peculiar to it. Its color pattern may be so attractive that the masters among men adopt it for their designs. It evolves from the seemingly gross materials it has consumed there in your garden one of Nature's radiant masterpieces. A gorgeous moth or butterfly takes to wing.



SCOFFLAW
A heavy-drinking aphid

All this time your other uninvited guest, the aphid, typifying those who live by drinking, has been working out its problems of multiplication. Almost any time in the early summer one may strip a tender tip of rose bush, for example, between his fingers and find that he has gathered a score of insects barely large enough to be seen distinctly with the naked eye. These are the aphids, chief of all the sap drinkers. With their relatives they are more harmful to man than all the snakes, tigers, wolves and sharks taken together.

These tiny but abundant aphids have one particularly interesting habit that sets them out among the animals of the six-leg world. Most kinds of aphids winter as eggs. When these eggs hatch in the Spring the young are all alike in one respect. They are all females. There is no single man aphid in all the colony. Yet every individual in the colony is capable of giving birth to live and kicking young. As a matter of fact every individual does set about having young ones. These young are wingless and may in turn produce wingless young.

Through all the Summer generation after generation of aphids may be produced in this way. A generation of winged forms may appear and spread the family to other plants but it may be followed by wingless generations. Then in the Autumn a strange thing may take place. Of a sudden a generation of aphids appears in which there are both males and females. The females of this generation follow a different program from those that brought forth young through the Summer. Instead of producing young like themselves that are ready to go to work and make a living, they mate and lay eggs. These eggs lie dormant through the Winter and start the new generations of the Spring.

When the aphid is born or hatched it is, in

APHIDS, HEAVY DRINKERS
Here are three of the offenders caught in the act

THE BUSY ROSE CHAFERS
These are beetles that attack many of the garden plants

BORERS FROM WITHIN
Here is a garden caterpillar that hides in the stalks

one way, like the caterpillar. It is dominated by a single instinct, that of getting itself in a position where its food supply is assured. But, being a drinker rather than an eater, its method is different. It is armed with excellent drilling machinery. It selects a spot where the bark is young and tender and begins to bore. Soon it has got through to the sap currents of the plant. It has accomplished its purpose. With its food supply assured it may settle down for life.

There are odd and interesting members of this drinking crew that may appear in your garden. The tree-hoppers, brownies of the insect world, settle down on tree or shrub, disguise themselves as thorns or bit of bark and drink sap for a lifetime without you ever knowing they are there. They injure plants by the punctures they make in the bark for purposes of laying their eggs. Mealybugs are other related species, as are the fantastic lace bugs of the chrysanthemum bush.

The garden may be infested with members of the drinking army and may be drenched with the lead arsenate spray,—which is death to the eaters,—and it will have no effect on the drinkers. They do not eat off the surface and so do not get any of this poison. Their food supply cannot be reached by sprays and so a different scheme must be followed in fighting them. Sprays have been developed that kill by contact. They are the most widely used insecticides in all the world.

The potent part of the most popular of these sprays is tobacco extract. It can be bought at the drugstore. A spoonful of it with water will make a gallon of spray. Orchardmen use great quantities of it in battling the San Jose scale. It comes near being a necessity to whoever has a garden and must wage war against invaders.

So we have at least these two, the lead arsenate spray and the tobacco extract spray, one for the eaters and one for the drinkers, as the basic ammunition with which to battle the pests of the garden. Either of them works better if the water is soapy. They will do the bulk of the execution. The two can be combined upon occasion and a shotgun mixture made that will deal death to both groups. Other sprays may be more effective under certain conditions, of course.

APHID
Look to your chrysanthemums

One or two other odd visitors should be mentioned. There is the ant, for instance, admired for its industry, abominated in the pantry, and much more harmful than is supposed. Ants spoil many a lawn with the dirt brought up. The greatest harm to the garden, however, comes about through the fact that certain ants may be the protectors of certain of the aphids. The eggs of these tiny insects are taken into ant burrows underground in the winter and kept protected. In the Spring they may be brought out. This is done for the honey dew that may later come to them from the aphids. The aphids, drinking the abundant sap, make this for the ants and thus pay for the care shown. The milking squads of ants are busy through the summer days taking their rewards.

Little results are accomplished when the forager ants in the garden or the pantry are killed. Another squad is sent out on the morrow. If ants are to be got rid of, the queen hidden away is the one at whom to shoot. So, for decades, the scientists worked in developing a poison which they could send down to the queen by her own messenger. It must be so mild that it will not kill the forager which carries it but will be fatal at the dinner table underground where sits the queen. Such poisons are now on the market and cans of them, sitting about the garden, with holes through which the insects may enter, are the best ant exterminators.

Then there is another odd visitor to the garden, not an insect at all, of whom its owner is likely to know little. The garden slug, a mollusk without a shell, prowls about at night. In the morning the way it has gone is marked by a silver band on the wall or pavement. So tender is its body that it must lay itself a roadway of slime as it goes. It has been looking for potato peelings. Not finding them it may fall upon the lettuce bed and devour it.

The need of a smooth road may be made the undoing of the garden slug. Sprinkle ashes in its path and it is undone. In trying to build a roadway it exhausts itself secreting slime, and dies.

CHARLES LATHROP PACK DEMONSTRATION FOREST AND ITS VICINITY

A PATHWAY TO YESTERDAY

These trees in the Demonstration Forest once saw red men, missionaries and settlers

Show Windows of FORESTRY

Story of New Pack Demonstration Forest

by Tom Gill

"SHOW ME" is something more than a national slogan with us Americans—it is almost an habitual attitude. We have come to pride ourselves on our incredulity, on our instinctive scepticism regarding the things we hear about, but have not seen. It is an attitude carrying with it many practical advantages—also an injustice or two. For among other things it is just this insistence on being shown that has had no small effect in holding back the popular acceptance of forestry in this country.

Since the beginnings of forestry as a profession in America, foresters have met throughout the land, discussed problems with each other, compared methods and results. They have learned much. But the great public has always hurried by, busy on other ends, intent on more human things such as a channel swim or the collapse of boom prices in Florida. Here and there, true enough, a few lumbermen, municipalities and States had begun planting trees on varying scales. State forestry had developed and new forest schools sprung into being. And all these activities, however tentative, were encouraging, but not by any means had they become part of our life and thinking. Nowhere had this planting of trees or care of trees a grip on our every day national consciousness. For we say commonly enough, "What a fine field of wheat," or "How well this barley is coming." But we do not say, "What a bully plantation of white pine," or "Your spruce is putting on good growth." Yet both of them are essential crops. We simply do not see these things—we do not know. And it is just because we do not know that we as a nation have kept aloof from a profession that is fighting a long uphill fight in defence of our national welfare. For forestry is something more than a profession. It is a crusade. And a crusade without the heart and will of America behind it has scarcely a better chance than the well-known dog chasing the proverbial cat through the region of wide renown.

Trouble was that the results of forest culture were not to be seen in the market place. They could not be shown in the legislative halls where long speeches and short appropriations are made. Worst of all, Mr. John J. Doe had only a very hazy notion of what it was all about and could not for the life of him tie up the need for forestry with the mounting costs of books and houses and beefsteaks, with Mississippi floods, or last spring's wretched trout fishing.

Well, after all, you can't carry a sample forest around in your suitcase. You can't take it to the corner of Front and Main and say, "Here is what forestry is and what it is doing for us. Now isn't it worth while?" You can't do that and yet forestry, like many more of life's good things, has got to be demonstrated before it can hope to win confidence and support. The fruit of the architect's labor is always before us in eternal steel and stone—everlasting monuments. The engineer's skill knits together far-flung corners of the land with bridges and miles of rail. We see these things. They have become

WHERE THE RECREATION AREA IS TO BE

A small area will be placed under careful supervision for use of tourist and Nature lover

part of our very living. So, gradually, foresters have come to recognize that somehow in some way forestry must visibly translate itself into terms of human progress and human welfare before it can lay claim with any hope, or indeed with any essential justice, to more than a very casual portion of our interest and support.

Something was needed.

Already there existed forests owned and managed by forest schools and dedicated chiefly to laboratory purposes where experiments and forestry methods might be put in practice. Near Biltmore in North Carolina is such a forest. The Harvard Forest at Petersham, N. H. is a perfect forest laboratory, the most interesting in the United States. The forest of the Yale Forest School at Keene is still another.

And all these have had immense educational value and stimulus to visiting foresters—in fact to all who saw them—but not so many saw them. It remained for Charles Lathrop Pack, economist and forest educator, founder and president of the American Tree Association to coin the phrase and to give proper emphasis to this idea of a "forest show-window." A forest intended primarily as a show place for the people, dedicating itself by practical demonstration to public education in forestry.

"So far," said Mr. Pack in effect, "the Mohammeds of the city have failed to come to the mountain. Perhaps it is about time we tried moving the mountain to them."

So a systematic plan for forest show-windows came into being. To get themselves seen—that was to be their big function, and it is in the emphasis on this conception that they differ from the rest of the areas of the United States now under forest management. They were frankly to tell the world what forestry looked like, how the wheels went round, and to demonstrate what it could do.

Late in 1925 the first Charles Lathrop Pack Demonstration Forest was created, a gift of four hundred and twenty acres to the College of Forestry in the University of Washington. For demonstration purposes it was splendidly situated. Seventy miles from Seattle, forty from Tacoma on one of the finest highways in America —the Rainier National Park highway. It was Mr. Pack's initial salvo in his campaign for the demonstration forest idea.

Today the largest, and for demonstration purposes, the ideal show-window is the forest recently given by him to the Syracuse University New York State College of Forestry. Here is the show window *par excellence.* A superb location in the Lake George section of the Adirondacks where trees and sky and lakes conspire to paint a picture of unforgetable loveliness. Here the wilderness stretching for unbroken leagues down out of Canada meets the northern outposts of civilization. Here men weary of the noise and dust of the crowded places find rest and playtime, and even the wild things have sanctuary. Here, too, still lingers all the color and romance of hard-fought battles and the bitter warfare of Colonial times.

Two great timber regions intermingle here in a transition zone of botanical richness. For the white pine type of forest extending down out of the northern country joins here the upper boundaries of the great central hardwood region whose hardy adventurers, the oak, chestnut, and red cedar have come up to mingle with the pine, beech, birch, and hemlock combination of the northern woods. So, in a botanical sense, the tract contains the interest and diverse problems of these two great forest types.

It is a region, too, whose traditions and life are bound

FIRST INSPECTION OF THE DEMONSTRATION FOREST

Nelson C. Brown and Dean Franklin Moon of the New York State College of Forestry with the author in the center

up in the forest and its products. Not a farming country, but essentially a timber country where Nature seems to resent man's very intrusion of cleared fields and wages constant warfare to bring back the land to trees again. So it is that should a field be neglected two years or three, the forest hastens to reclaim its own and thick as bristles on a brush, the sturdy young pines seize the soil. In this, Nature is doing the wiser, the economic thing, for on this sandy, glacial soil and at this altitude, trees in the long run are the most useful crop to man. Generations of settlers have lived out their lives here, supported by the forest. Wood served them well—even their roads were wood. For in the memory of men still living, the highway where now high-powered cars whir at sixty miles an hour was a road of sawed hemlock planks laid down side by side for twenty-six long miles. And those hemlock planks seven feet long, two inches thick, and often thirty inches wide were delivered at nine dollars a thousand board foot. Today, provided you could get them, you would pay fifty dollars. Yes, there may be something to this talk of a timber famine.

Here then as in some sylvan paradise the Charles Lathrop Pack Demonstration Forest has been created. Twenty-three hundred acres of rolling timberland varying in elevation from eleven hundred to seventeen hundred feet above the sea. Its western boundary is the Hudson and through the heart of it winds for three miles the most heavily-traveled highway between New York City and Canada. White pine, hemlock and spruce, birch, beech, and maple, hardwood and softwood of every age and class from tiny seedling to veterans three feet in diameter. Syracuse foresters estimate about two million board feet of hardwoods and nearly three of conifers. All through the Summer and Autumn car after car of tourists, campers, Nature lovers, and hunters make their way right through this demonstration area—an endless caravan of Mohammeds to whom the mountain has at last been brought. And like a gem in all this lovely matrix is a grove of virgin white pine that has come down through the long centuries untouched by axe or fire. Two hundred and forty acres of these forest veterans, their tall trunks stretching with cathedral-like solemnity up the long slopes into the heart of the forest. One loves to linger there, for it is a place of dream-like loveliness. It

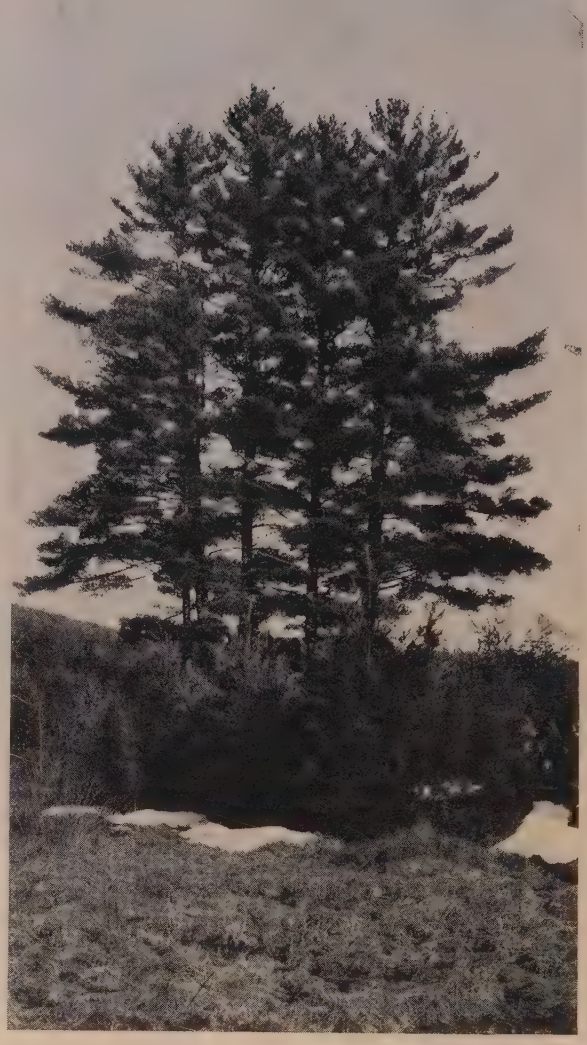
PLANTING THE FIRST SEEDLING

Dean Moon of the N. Y. State College of Forestry and the author turn tree planters

may be some of these old monarchs were already thrifty seedlings when Columbus knelt to give thanks on finding a new world. They were lofty trees when the first white man stepped beneath them, and they were old when the Continental Armies marched by to throw off the foreign yoke. They have given refuge to warring Indian tribes, to French missionary, and to the blue uniforms of Colonial arms. They have heard the axe ring among their brothers, but no axe has ever touched them in all their four hundred years of living.

Best of all the choicest portion in this grove of pine is to remain unchanged and undespoiled for Dean Moon, head of the Forest School, will preserve at least a part in its primeval condition forever. It will be an eternal outdoor museum of Nature where coming generations may behold this noblest type of eastern tree life.

Of course not all the twenty-three hundred acres are of this caliber. And it is better so. For only by wide variations of tree growth and soil can the Syracuse foresters hope to present in their show-window the sample problems that go to make up the practice of forestry. Every stage in the regeneration of a forest from seed to mature tree, every operation that attends the scientific cutting of the ripe crop is to be shown. And since there is no barren ground each acre can be made to contribute its share toward telling the story that should be told.



FOUR FOREST VETERANS

For centuries these white pines have looked out across the Lake George region

One-fourth of the tract, perhaps, is open field. These portions the faculty will develop as plantation areas where many species will be planted under varying conditions so that he who rides may read the difference in growth and appearance between this kind of tree and that. There, for example, Dean Moon will plant the old residenters, white pine, Norway pine, and spruce. Over here alien species will find their experimental place, yellow pine from the Rockies, Douglas fir from the deep forests of the Northwest, larch from far-off Japan. Here, too, the lay of the land has conspired in adding to the effectiveness of the forest, for beside the highway is a long stretch of cleared land, perfectly adapted for a nursery and plantation site. Signs will point out to the passing motorist these baby trees and will tell what size one species or another can reach in five, six, or ten years. Beyond the nursery Christmas trees will be set out—an effective lesson in raising this most famous of winter crops.

Farther up the road, perhaps, our visiting Mohammeds will learn how the forester thins a certain clump of trees to aid Nature in increasing tree growth. Still further he looks upon a stand of mixed hardwoods and pine where the forester is working to increase the proportion of pine at the expense of less valuable trees.

GENERAL VIEW OF THE EASTERN BOUNDARY

At the left is the highway to Montreal, known as the Bootleg Trail for obvious reasons

He learns how inferior weed trees are taken out to favor the more highly-prized species. And so over the entire tract the visitor is lured along pleasant paths always to find some new forest problem, and the forester's solution.

But, like imperial Rome, demonstration forests are not created in a day, nor are they brought to perfection without long labor and thought. To cope with these problems and to bring this forest show-window to its point of greatest usefulness, the brains and experience of the New York State College of Forestry are already at work. In charge of the tract will be a graduate forester and under his direction an experienced woods' foreman. Every May the senior class in forestry will there receive their last practical work before graduation.

And through it all day after day, month after month, men and women will be traveling, stopping, looking, asking questions and at last going on with a clearer idea of what forestry is, finding it has a very real part in today's living, not just a thing of books and Utopian dreams. It seizes the imagination, this creation of forest show windows. And, yes, they will be text books, these forests, living, growing text books, thrown open at pages that hold a lesson for every one in whose life wood plays a part—and that, according to the last census, is about one hundred and ten millions of us.

THE EDELWEISS

by Garrett P. Serviss

The fascinating Alpine Edelweiss, flower of the upper reaches

This plant will grow in lowlands but seems to prefer heights

THE EDELWEISS, or "noble-white", has, with considerable truth, been called "the most dangerous plant in the world". The statement that it has cost many Alpine climbers their lives is undoubtedly exact. Ordinarily its starry white flower is only to be seen in the most inaccessible spots, at great altitudes, on steep mountainsides, guarded by precipices which even the sure-footed chamois would avoid.

As a member of the largest order in the vegetable kingdom, that of the Compositæ, and a relative of such familiar flowers as the daisy and the black-eyed Susan, there is something singular in the shyness and aristocratic aloofness of the edelweiss. And this seems all the more remarkable from the fact that it can be cultivated with ease in any ordinary garden. But when thus cultivated it loses the characteristics for which it is sought.

These characteristics are the ampleness of the flower, its pure, snowy whiteness, and the peculiar woolly down that covers the leaves of the plant, and the involucre, or ring of bracts, surrounding the flower-head.

The surprise and admiration excited by the first specimens of the edelweiss encountered by the Swiss and Tyrolean mountaineers led to a popular superstition concerning the plant, and for generations it has been regarded as the emblem of purity, and the most suitable of all gifts to a bride from her bridegroom. There could be no stronger inducement than this to lead adventurous spirits into dangerous places for the sake of obtaining the coveted flowers. Every canton has its local traditions and poetical legends about the edelweiss.

The flower appears to flourish best on limestone, its roots spreading widely in the cracks of the rocks, and it is comparatively abundant among the limestone ranges of the Eastern, or Tyrolean, Alps. It grows also in the Pyrenees, and has been found in Siberia. Since the modern influx of tourists in the Swiss Alps the edelweiss has become scarcer, and laws now protect it.

There is an element of mystery in the ascent of high mountains by this plant, the vast majority of whose botanical relatives dwell amid the warmth and abundance of the lower world. The delicate vegetable wool with which it protects itself shows that it has yielded to the necessity of adaptation to its icy environment; but why should it have climbed so high, and sought so frigid a home? There is plenty of limestone in the valleys below, and experiment has proved that the plant can be forced to grow there, but when left free to follow its own bent the edelweiss seems to disdain all lower levels and all commonplace surroundings and will grow, of its own accord, only high among the peaks.

H. ARMSTRONG ROBERTS

AT THE CROSS-ROADS OF TODAY

The much-marked signpost reflects ... ow the trails by car a...

THE LURE OF THE TOUR IS STRONG
Nature holds many charms for the seeker and the by-roads lead to her greatest secrets

NATURE WAYS *by* CAR AND CAMP

Light Housekeeping on Wheels Leads to Luring By-ways

by Gilbert Irwin

IT MATTERS little what trend your outdoor thoughts take, car and camp are quite likely to fit into your plans. Only a few years ago, when good roads were in the making, this cut-cost plan of vacationing, now in vogue for the average citizen and many of those well beyond the necessity of economy, was not highly regarded. When on your afternoon or week-end tours you chanced to pass those disorderly little outfits with camping equipment piled on, or sighted the tenters by roadside, they seemed a queer sort, a class outside of the average motoring humanity.

WHERE DOES THE TRAIL LEAD?
That is the fascination of the by-way into which the venturing motorist should go

But this is now all changed. The old days of the touring gypsy, the gasoline hobo and the tincan tourist have passed, and this new sport of family, or business car diverted to party or family vacations and hooked up with the independent mode of tenting is quite in style all over the country. The disorderly old style of touring has gone into the discard, ancient flivver and unsightly raghouse have disappeared. Today touring and camping is tuned up and refined and you find high-priced cars and costly limousines in the tourist camps along with the cars of more modest mien. Like the radio and movie, this idea of cheap and independent travel brought about by the automobile happened to be one that took popular fancy permanently, instead of being one of those frequent passing fads.

Until this new travel idea developed, costs of travel precluded the average citizen including the whole family. In fact, travel pleasures were largely the privilege of those beyond the restrictions of a family budget and the need of laying away a reserve for declining years, when, perhaps, that desire for travel might be gratified.

Today a bit of recreation for about everyone is the popular idea. An occasional let up from arduous tasks for those who toil and produce is the modern thought. So, for the average man and family, car and camp presents travel and vacation pleasures at a cost within budget limits and not such as to make too heavy inroads upon frugal savings. Mixed in with workmen from fac-

COMPACT TRAVELING EQUIPMENT IS AVAILABLE
A visit to the sporting goods and accessories dealers will disclose a wide choice of materials

tories, toilers from shops and offices, small town and city business men, farmers and those of all callings, cars loaded with tenting outfit, enjoying the big tourist camps, and stringing through the back country, are a liberal mixing of cars of the rich. The latter take to this facile mode of outing as escape from the more formal modes, perhaps for a time in lieu of golf or to build up stamina run down due to business stress. The incognito possibilities of this non-conformist outing appeals to all classes.

Most anywhere in the back country you are liable to make contact with multi-millionaire, with noted scientist, perhaps a Harvard professor or a Smithsonian field man, car and camp serving in their back to Nature tour. In spite of all the humorists and the comics have to say in derision, this call of the wild is real and appeals at times to all red blooded Americans.

With about every industrious citizen now a car owner, and all the outdoor enjoyments readily brought within the reach of family by merely adding the camping assembly to any car one happens to own, all outdoor pleasures are now just as readily brought to John Doe and family of Toiler's Row as to Rolla Royce of Fortune Boulevard, and the plan of roughing it appeals to almost everyone. To be out on your own resources, independent and free in your wanderings is something that has a peculiar appeal.

Touring and camping today is no longer a matter of seeking out routes for there are good roads to take you from anywhere you happen to be to most anywhere else. The good road problem in most states and in many of the Canadian provinces no longer concerns tourists. You just hike out in most any direction and you find good highways awaiting.

Touring and camping today is by no means confined to the concrete and macadam motorways. Good by-ways, forest trails and other passable back country ways are to be found leading back from the traveled highways. Little matter where you tour, you will be surprised how many of the good things of Nature and man are hidden away back beyond the reach of knowledge of the constant passing motor parades along the main highways. Of course more care and less speed is required for this back country touring, but the experienced tourist and camper soon drops the idea that the main object of motoring is to see how much mileage the speedometer can pile up in a day or on a trip. On the Nature trails in the back country safety precludes speeding and hurrying, and at about every turn there is something interesting for the true seeker.

When you motor in the National or state forests and parks you get an insight into the science of bringing back the woodlands long ago ravished by ruthless cutting. It is surprising how many campers you find no matter how far you go back on the public forest trails. You meet cars and families from many states at the public tourist camps any summer day, just enjoying a vacation or ranging around learning now or recalling long-forgotten things of Nature.

PACKED UP AND ON THE WAY
The disorderly old form of "tincan" touring has become a thing of the past

For the average family the forests and the back country have many attractions and this cut-cost travel plan provides the means of enjoying these Nature lands. It may be

(Below) THE TOURIST CAMP IN THE FOREST
Most communities have such camps, and parks and forests are well-equipped

(Left) THE BACK ROAD NATURE TRAIL
It leads the auto camper to many alluring spots where Nature reigns

that the urban dweller today has a fair conception of what conservation and reforestation mean but the automobile takes him where he can see for himself. Green forests and their relation to future timber supply, good sport, protection of watersheds, insurance of pure water supply, and flood control are things about which the tourists and campers learn on their Nature tours.

Bits of outing etiquette picked up in the forests are good guides for all car and camp trips. Warnings against the fire menace, due respect for all forest laws, clean camps, purity of waters, no plucking of flowers or ferns, or injuring or defacing trees or other growing things, are enjoined upon visitors to the public forests and can well be practiced everywhere in the outdoors. Even well-meaning town and city dwellers who rave when the neighbor's cat or hen happens into the garden or when urchins tramp the grassplot, is often not so careful in his own acts when touring and camping. Every bit of the big outdoors is owned by someone, and the owner has the same rights that a city-dweller applies to his bit of town real estate.

Littering forest or roadside, scattering lunch fragments, trespassing on private acres or leaving gates ajar for cattle to stray, are the things that farmers resent and which cause those annoying "No Trespassing" placards to flourish in greater numbers annually. Public forest-touring lessons applied to all vacationing is the proper idea. Friendly foresters and rangers will gladly put one in touch with all the interesting things back in the big woodlands if one will repay them with good manners in the outdoors.

Visits to the forest fire towers, to the game sanctuaries back in the wilds, hikes with the foresters from forest camp to various points of Nature interest, are things that this new cut-cost outing scheme offers the average citizen. The privilege of Nature lessons for laymen, as well as for expert or scientist, is now easy at hand. In the forest depth, public or private, anywhere you tour or camp, you will meet Nature experts of all kinds; foresters, geologists, botanists, zoologists and many others. In the clear skies of mountain or lake region you will have a wonderful opportunity to renew long-forgotten bits of skylore, for at night those clear skies display more stars than urban dwellers might imagine the heavens could contain.

And now, if you are assured that this short cut to outdoor pleasures is all safe and entirely proper, which the great majority of car owners of all classes all over the country have already done, you will be devising plans for a trial of this easy method of transit for your Nature

twenty men working night and day in the flooded area where wild life was most seriously affected.

Laconia Circle has for years been recognized as Arkansas' greatest wild life center, but until the flood caused the animals to flee to the safety of high ground, it was not realized how well populated these 20,000 acres were. When the levees in the Circle began to crumble, wardens undertook to remove the large number of stranded deer to higher ground some twelve or fifteen miles north. The crude method of handling, coupled with the natural extreme fright of the animals, resulted in the death of many from injuries received in the removal. Many also fell as easy prey to the small bands of wolves which patrolled the levees. The same conditions prevailed in the Lambrook area, and a greater percentage of the deer removed, died. Wardens followed several dozens of swimming deer throughout this area and saw them reach a safe ground.

Necessity overcomes the fear of animals, however, and after a few days of almost entire starvation, the deer readily accepted the assistance of man. In many sections, herds of deer were to be seen calmly grazing on what little shrubbery could be found, while nearby, men and women, also driven from their homes by the flood, stood anxiously watching the hungry waters swallow up their possessions. They soon came to realize that a common bond of refuge existed between man and beast, and in many sections the marooned people shared their scanty food with the birds and animals.

TREES OFFER SANCTUARY TO SOME

Mink, raccoons and opossums are believed to have found refuge in trees in the flooded area

The feeding problem presented many angles to the game wardens. Vegetation was scarce along the levees, and the large numbers of work stock and cattle interfered greatly with their plans. They finally solved the puzzling situation, however, by building wire enclosures in which was placed food for the marooned deer. The wild animals would jump the wire, while the stock would remain outside.

Quail, in Arkansas, were fed on higher points and in many instances on drifting wood or floating bridges. Many bevies were seen marooned on floating housetops and log drifts, and their destiny was uncertain. With no cover to hide in, the brown beauties, whose mellow whistle is more melodious to many than the silver-toned trill of the golden canary, suffered destruction at the hands of hungry predatory animals. There was a decided concentration of quail along the Rock Island road bed between Forrest City and Memphis. These were fed by a game warden from Forrest City, and the food was furnished by the Izaak Walton League Chapter of that city.

Very little could be done for the turkeys. Protection was given them but feeding was almost impossible. In the Desha and Chicot County areas a great many deer fled to the higher lands and these were fed by regular or special wardens. It is estimated that deer in these sections have doubled in numbers in the last three years.

The money for this work in Arkansas came largely from the State Game Protection Fund. The work of the wardens was done, of course, in small boats, most of them equipped with outboard motors.

In Mississippi, the wild life in the flooded areas suffered to a greater extent. The Magnolia State has no game and fish commission, the respective counties making their own laws and regulations. Hence the wild life of that state was not the recipient of succor from organized sources. The suffering was thus more acute, and in numbers of cases, deer came into the midst of refugee camps along the levees, eating what few scraps could be found. Rescue workers, in many cases, fed bread to the suffering animals. In this state, also, a number of black bears were seen to lumber up into higher ground and disappear in the tall cane. Wild hogs in large numbers were seen floating on logs and in tree tops, while thousands of rabbits flinched to the pop of motors as the rescue boats plied uncharted waters in their missions of mercy.

Thousands and thousands of wild geese and ducks remained, strangely, in the flooded districts, long after the date when they should have winged their flights back to northern shores. In one small clump of trees, surrounded by miles of inland ocean, seventeen wild turkeys were counted.

Tom Crawford, from the Sunflower River country, who piloted his little open boat up to Greenville, Mississippi, and offered his assistance in flood rescue work, made innumerable trips into the inundated districts. Thousands of people were rescued in this manner. On one of his trips, as he neared a flooded farm house, he heard what sounded like the wail of a woman. A search of the second story revealed that the cries were made by four full grown panthers! Tom left hurriedly.

The "Fifty-fifty", launch owned by Thornton Newsum of Memphis, has served full time in rescue work and after being discharged from service, made numerous trips carrying grain and hay to the resigned animals.

Louisiana is the last state to be visited by the force of the flood in its mad rush to the open sea. The breaks in

its levees caused the inundation of hundreds of square miles of country rich with wild life, and the situation was much the same as that existing in Arkansas.

Stanley C. Arthur, director of the Division of Wild Life of the Louisiana State Department of Conservation, says that it is impossible to estimate the losses in wild life in that state. Many rabbits perished in the flood. Wild turkeys, quail, doves and other birds, many with eggs just laid, he feels, have suffered heavily, while deer and bear have probably largely been able to escape to higher ground. Otters and beavers are not particularly concerned, of course, and it is hoped that opossums, raccoons and mink found temporary refuge in tree tops. Muskrats form an important economic item in Louisiana and to save as many of them as possible, Mr. Arthur's office set afloat rafts covered with straw and grass upon which these animals could take refuge.

L. W. BROWNELL

WILD TURKEYS SUFFERED HEAVILY

Much needing protection from hunters these birds have been reduced by the flood

F. G. Ashbrook of the United States Bureau of Biological Survey, estimates that about fifty percent of the ground-dwelling fur and game animals in the flooded areas have been lost. He points out that the flood came when young animals were still suckling and that even though the older animals have been able to make their escape in one way or another, the new generation has been practically wiped out.

J. W. LIPPINCOTT

OPOSSUMS VIEW THE SCENE

It is hoped that many escaped the flood by taking refuge in the trees

Near the path of the on-rushing waters was the Rainey Refuge, a Louisiana sanctuary donated by the sister of the late Paul Rainey. The wild life in that preserve escaped the severe fate of its up-the-country cousins, as the suffocating hand of the Father of Waters menaced the wild life of the southern swamps.

It is impossible to estimate with the slightest degree of accuracy the damage done to the nation's wild life by the wrath of the most disastrous flood in the history of the Mississippi Valley. More than eight millions of acres have been inundated, and more than seven hundred thousand people made homeless.

Under a sheet of muddy swirling waters lies one of the three remaining great wild life sectors of the United States. The loss in these resources will be tremendous. Just as the flood's subsidence will reveal greater losses of life and property than at first computed, it will emphasize in several seasons to come the destruction done to wild life.

H. T. MIDDLETON

MANY SKUNKS HAVE BEEN DESTROYED

It is estimated that ground-dwelling fur-bearers have been fifty per cent lost in the flood

The damage to quail, deer and [illegible]'s from drowning and starvation was first to run its course. The most serious loss will be in the destruction of nests and young and the loss of the season's increase. The crop of fawns this year will be very small. The water reached its crest about the time these fawns should have been dropped. In many sections, there will be no broods from turkey or quail this year, although in other sections where the waters are rapidly receding, the quail crop will be retarded but little. It will be greatly diminished, however, and it will be many years before southern wild life could, in the natural course of events, recover from the staggering blow dealt by the flood. The catastrophe has brought home more forcibly than ever before the need for systematized conservation of wild life.

FAT AND SASSY IN SPRING

Steve, who seemed to show emotions not generally credited to fish

GOLDFISH EMOTIONS

by Romanie Van de Poele

THE CHARM of the goldfish bowl (for the beholder, not the fish) is that every moment of the life of the fish may be observed. One learns that they are not all alike, and may disclose mannerisms, even as Pola Negri. They may show traits of selfishness or generosity, grouchiness or delight, much as humans do.

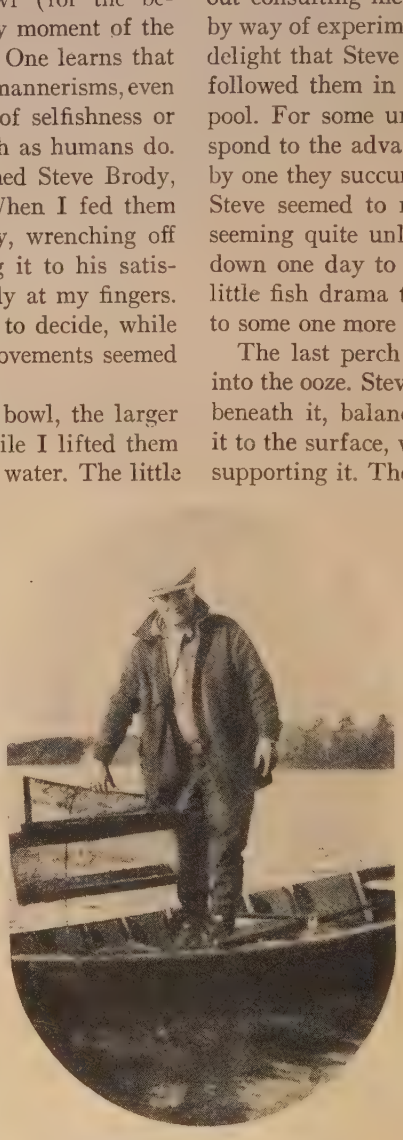
I had four at one time which I named Steve Brody, Missouri, and the Heavenly Twins. When I fed them by hand, Steve always ventured boldly, wrenching off his portion as his right, and softening it to his satisfaction. He would even nibble playfully at my fingers. But Missouri always took a long time to decide, while the twins never came near and their movements seemed quicker than the older ones.

When I changed the water in their bowl, the larger fish would lie passive in my hand, while I lifted them quickly to a temporary haven of fresh water. The little fellows always gave me a chase.

Despite my precautions, the cat must have gone fishing for Missouri, for I found her one morning on the top of the water dead, a little the worse for wear. In June we took the remaining fish with us to spend the summer in the lily pool. The journey was too much for the twins. Steve survived and the way he grew in that outdoor pool was astounding. What delight he took in leaping in the spray when the pool was being filled! I tried to get some companions for him but the season was too late. After a while Steve began to act "broody". Should I have named it Stephanie? At any rate she (?) wriggled her body in the soft ooze of the pool as if she desired to hollow a nest for her eggs.

Our gardener, who has what Burroughs called "the detective eye", is also somewhat of a naturalist. Without consulting me he put some small perch in the pool by way of experiment. They lived for a few days and the delight that Steve felt at their coming was evident. She followed them in an endless merry-go-round about the pool. For some unknown reason the perch did not respond to the advances of the golden aristocrat, and one by one they succumbed to the restricted life of the pool. Steve seemed to regret them, lying quietly about and seeming quite unlike her merry confident self. Coming down one day to gather a few lilies I came upon this little fish drama the true significance of which I leave to some one more scientific than myself.

The last perch was evidently dying and sunk down into the ooze. Steve went after it, and, working her body beneath it, balanced it upon her foreparts and raised it to the surface, where she remained almost motionless, supporting it. The perch revived, swam about a bit and then, turning first on its side helplessly, began again to sink, nose down, in the ooze. Three times Steve repeated the heroic work of rescue, but the third time the perch failed to revive.



STEVE'S WINTER HOME

The fish spends the frozen season in a wire cage in the lake

Did Steve reason that the perch needed air? Did she remember that *she* felt better coming to the surface for a sniff of ozone, and hope that the perch would respond in like manner? Did her cold fish heart contract with sorrow at the loss of her companion? We are too prone to think that we alone have emotions.

Is Steve an unusual goldfish? I do not know. For two seasons, fearing that the trip would prove fatal, we have put her in a wire cage, held down by a rock, and wintered her in the lake. She comes up fat and sassy to take up her summer quarters in the lily pool. I can't wait for the ice to "go out" to see whether she is still living.

MOUNTAIN MEADOWS ARE A RIOT OF COLOR

Thousands of tourists are now looking to the playgrounds of the country where the wild flowers are a crowning beauty

A Wild Flower PARADISE

by P. L. Ricker

President, National Wild Flower Preservation Society

With the approach of the summer season thousands of tourists will turn to the West by train and automobile for their vacation. A very large number of them will go to the National Parks and camp as close to Nature as possible. Unfortunately for those with a Nature yearning, many of the country roadsides they will pass are being constantly mowed, or burned, to keep down the menace of weeds to adjoining fields, and the railroads are burning, or spraying, their right of ways with weed-destroying chemicals to lessen the danger of sparks from the locomotives causing serious fires, and to reduce the attraction for cattle to stray to a danger zone.

Western conservationists are already prophesying that the prairie flowers will be practically unknown in another fifty years, and judging from the scarcity of wild flowers in many parts of the South, due largely to the ill-advised practice of burning over fields every year, this unfortunate condition may arrive much sooner. There are, however, still many plains and mountain meadows in the Rocky Mountain and Pacific Coast states where the flora presents a wild riot of color to be found in very few other parts of the country.

Three of the species illustrated are state flowers and while a state flower may be desirable from a sentimental standpoint, few flower-lovers among the state flower advocates would have been so keen on the subject could they have foreseen the devastation that is being meted out to many of the less persistent kinds for home, church and general public decoration, particularly on festal occasions. In some cases railroads have run special excursions to mountain meadows at the height of the flowering season and indiscriminately urged their passengers to pick flowers to their hearts' content when they might as readily have obtained the same financial results, with a considerable observance, had they urged moderation in picking of certain of the rapidly-disappearing kinds.

In many of the National Parks, Nature guides are employed to take out parties of tourists and tell them of the need for protection of some of the flowers to be seen. In Yosemite Park the beautiful crimson snow plant, *Sarcodes sanguinea,* perhaps the most in need of protection of any of the western flowers, and growing only on decaying vegetable matter, is rigidly protected. It is reported that its picking is subject to a fine of twenty-five dollars.

The long brilliant rose-purple spikes of the blazing star, *Laciniaria,* with sixteen about equally-divided eastern and western species, add a broad expanse of color to many of the dryer fields and plains from July to October. These are preceded from May to July by the equally attractive bane to the existence of the rancher, the loco weed and the milk vetch, *Astragalus,* with their twice fifty-seven western and a much smaller number of eastern white and purplish varieties. Fortunately not all of them are poisonous, or the ranches never would have existed.

The more moist meadows produce a scattering of the blue flag, *Iris missouriensis,* from May to July. In the East these and other flags are sometimes accompanied by the cardinal flower, *Lobelia cardinalis,* and Indian

Blue Columbine—*Aquilegia coerulea*

California Poppy—*Eschscholzia californica*

Pasque Flower—*Pulsatilla hirsutissima*

Wild Lupine—*Lupinus perennis*

Shooting Star—*Dodecatheon pauciflorum*

Bitter-Root—*Lewisia redeviva*

paint brush, or painted-cup, *Castilleja,* but in the West the latter, with their slightly more than fifty-seven varieties, are largely flowers of the dryer plains and mountain slopes from June to September, where they frequently form large contrasting beds, with the score of species of Jacob's ladder, *Polemonium,* with their violet to rose-colored flowers, often with white tubes. The name Jacob's ladder is derived from the ladder-like arrangement of the leaves.

One hundred species of pink to dark purple beard-tongues, related to the foxglove of the garden, often over-shadow all other flowers in abundance and variety of color. Horse mint, blue sage and verbena are common. Wild roses bloom abundantly in early summer and their scarlet fruits make the bushes attractive long after the flowers have passed. Golden avens and cinquefoil often add a yellow color to the deeper shades among which lupine, vetch and prairie clover, predominate among the Pea family. On the dryer plains a large variety of forms and colors of cactus and prickly pear, with beautiful yellow to deep red flowers, warn the tourist and dude ranchers to beware of the all too numerous large and small spines which a careless movement may plunge into the hands or legs and cause many unpleasant reflections.

WHITE-FLOWERED TRILLIUM

This is one of the wild flowers that is specially in need of protection for extermination

Throughout the Summer and Fall the Aster family predominates in many places with extensive fields of aster, goldenrod, thistle, cone flower, black-eyed Susan and wild sunflower.

Among the earliest and most numerous displays on the mountain meadows are the large fields of white avalanche lily, cousin to the white and yellow dog-toothed "violets" of the East and often found growing right up to the snow line, from which their name is derived. Much rarer and in great need of protection are the Mariposa lilies with their large white to lilac blooms with dark purple spots at the base of the petals, and the beautiful white-flowered trilliums. Ostrich, shield, sword and maiden-hair ferns are common in many of the damper woodlands with quite a different variety from those of the East.

Three of the color plates in this article are of the more conspicuous western flowers that, in many places along the transportation lines, form extensive masses of color and may be picked freely in such places if the roots are not disturbed and plenty of flowers are left to reseed the locality. The other three are much more in need of protection. Five of the six are state flowers.

Of the first group the wild lupine of the Pea family is the most abundant. About seventy species are found in North America and mostly in the western half from June to August. The species illustrated, *Lupinus perennis,* is found sparingly in May and June, in dry sandy fields and open woods from Maine to Florida, where it needs protection, and in somewhat greater abundance west to Louisiana and Minnesota. It closely resembles one of the more hairy species, *Lupinus plattensis,* of the plains of Nebraska, Wyoming and the Dakotas. Other similar species, some annual and needing partial protection, and some perennial and rarely needing protection, carpet the western plains and mountain meadows as far as the eye can see. One species, *L. subcarnosus,* known as blue-bonnets, is the state flower of Texas and is in need of protection in many places.

The blue columbine, *Aquilegia coerulea,* of the Crowfoot family is found on shaded slopes throughout the Rocky Mountains from June to August and is the state flower of Colorado, where in some places it has been much destroyed by tourists and natives as well. Farther from the lines of travel it is still abundant in many places. About ten other species are found mostly in the western states, varying in color from yellow and red to purple, blue and white. The flowers are fertilized by long-tongued bees that cling to the flowers while running a long proboscis up the spur for nectar. Short-tongued bees obtain the nectar by biting a hole in the tip of the spur. The name *Aquilegia* is derived from the latin word for eagle, from a fancied resemblance of the spurs to an eagle's claw. Pick the flowers sparingly unless abundant, leave plenty to go to seed and do not disturb the roots.

E. L. CRANDALL

THE PROTECTED PRICKLY PEAR

It is one of the few attractive flowered plants that bears its own defensive weapons

The pasque flower, *Pulsatilla hirsutissima,* of the Crowfoot family, is found on dry plains from Illinois to

British Columbia south to Nebraska and Texas during March and April, with one other species. It is the state flower of South Dakota and is in need of protection in some places; in others it is abundant. One other species is found on mountain slopes in the West and both are very closely related to the anemone. The seeds have long hairy appendages and form conspicuous white plume-like heads in the Fall.

The California poppy, *Eschscholtzia californica,* of the Poppy family, is the state flower of California. About ten species, varying from deep orange or copper to straw color, are found from April to September from Mexico and Southern California to Washington. Two of the species often flower as early as February towards the Mexican border. The former large fields of these flowers are becoming rare on account of increased picking and use of the land for agricultural, trade and building purposes. It is being urged that they be added to the California law which at present includes only the toyon or Christmas berry. The name *Eschscholtzia* is for Dr. J. F. Eschscholtz, companion of Adelbert von Chamisso, German naturalists on Kotzebue's scientific voyages around the world in 1815 to 1818 and 1823.

The shooting star, *Dodecatheon pauciflorum,* of the Primrose family, is found from June to August in wet meadows from Colorado to British Columbia and mostly at from 5,000 to 12,000 feet altitude. About ten other species are found, mostly in the western states, in which the flowers are often pink or white. A single species, *D. media,* is found as far east as Pennsylvania and Georgia as early as April, but at a much lower elevation than the western species and on rocky cliffs and meadows. The name *Dodecatheon* is for the twelve greater Greek Gods. The shooting star is represented by the yellow stamen tube and the reflexed petals indicate speed.

The bitter-root, *Lewisia rediviva,* of the Purslane family is the state flower of Montana where it is found on stony ridges in the Bitter Root Mountains westward and south to Arizona. As in most members of this family the roots are very tenacious of life on account of which it is much sought by collectors and is in need of protection in many places. Like most attractive mountain flowers the leaves are small and inconspicuous. Ten other species with mostly white to pinkish flowers are found from April to June with about the same range. The name *Lewisia* is in honor of Meriwether Lewis, one of the leaders of the Lewis and Clark Expedition to the Pacific Coast during the administration of Thomas Jefferson, our leading Naturalist President.

The Red Milkweed Beetles

CORNELIA CLARKE

MEMBERS OF THE "LONG HORN" GROUP

Enlarged photograph of the milkweed beetles, the most common variety being about one-half inch long

THESE pretty bright red beetles always attract attention, and may be found commonly during the summer months on milkweed plants. They belong to a large group called the "Long Horns" or Cerambycidae, and receive this name on account of the slender, cylindrical, horn-like feelers or antennae, which are generally long in comparison to the size of the insect. In the case of the red milkweed beetles, they are only of moderate length. Our most common form, which is burdened with the scientific name *Tetraopes tetraophthalmus,* is about one-half inch long. It is a stout-bodied insect with four black spots on each wing-cover, and the feelers or antennae black and shorter than the body.

Upon handling these beetles, which are harmless, we find that they produce a squeaking sound of protest. The friction of one part of the hard surface against another causes the "squeak." Whitish grubs or larvae are the young stage of the red milkweed beetles. They live in the soil about the lower stems and roots of the milkweed plants, upon which they feed.

HINTS AND HELPS

FOR

HOME and GARDEN

JULY

USE the long summer evenings to good advantage. Flowers cut after the sun is down and kept in water in a cool place all night will stay fresh much longer in the house than those cut during the heat of the day.

Cultivate often to keep the soil from baking and to help the plants retain moisture around their roots. After every rain a thorough cultivation will make the most of the water in the ground.

Sprinkle the garden only after the sun is down, and then give it a thorough soaking. Leave it entirely alone for a few days. A surface wetting is worse than no wetting at all.

Give your goldfish a summer vacation in an outdoor pool. If you have no pool, sink a tub in the ground; place six inches of rich soil in the bottom and plant a water lily in it. This will be ornamental to even the smallest garden and the goldfish will fend for themselves until fall, feasting upon the mosquito larvæ and other minute life in the water.

Porch boxes need more food now. The plants use up the richness of their small quota of soil very quickly. A little manure water every week or two and an occasional sprinkling of bone meal are excellent fertilizers.

July is high time to order bulbs. The nurserymen place their orders with foreign firms in the early Fall and you will have more choice and better quality if you order early.

If some of the clumps of perennials are not doing well, be hard hearted and dig them up. You will often find a mass of dead roots which have been attacked by some disease earlier in the season. Cut out the dead part and replant what is left.

Gather your everlastings or straw flowers when the blossoms first begin to unfold. Hang small bunches with heads down until the stems and flowers are well dried. If you wait until the flower is open, the dried flower will turn inside out with stamens too much in evidence. Be sure not to cut the flowers when the dew is on them, but wait until the sun has dried them out.

Your roses have given you a wealth of blossoms during early Summer. If you wish for more blooms in mid-Summer, you must strengthen your plants. Cultivate them, mulch them with grass clippings to help the soil retain moisture, and soak them with manure water every two or three weeks. Do not fertilize the weak plants. These plants are like human beings and can not stand too much rich food when they are not strong. Do not neglect to prune your climbing roses soon after they have finished blooming.

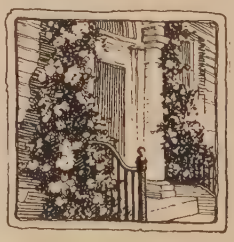
An excellent material for holding moisture in the soil is peat moss, which has been recently widely adopted in this country. It makes an excellent mulch for the roses as well as for rhododendrons and laurel, and can be supplied by all leading nurserymen.

Pinch off the smaller side buds of the roses and dahlias if you want large flowers. Some of the larger leaves at the bottom of the dahlia plants may be removed if the plant seems to be growing too much without flowering. Keep the side shoots cut off of the tomatoes. Gather the ripening seed pods of your favorite perennials and plant the seeds now. If you do not want them yourself, perhaps some of your friends would be eager to have them.

It is now time to start the freesias and oxalis, in order to have flowers for the house next Winter.

There is still time to sow pansies, forget-me-nots, stocks, and pinks for flowering next year.

Cut the delphiniums to the ground when they are through blooming and they will blossom again in the Fall. Cuttings may be taken from the lilacs, forsythia, roses, clematis, et cetera. Trim them 4 to 6 inches long and be sure to cut just below a joint. Place the cuttings in sand, water them well, and shade them from the sunshine. Young wood will rot more easily than old.



If your asters are molested by ants and aphids, sprinkle tobacco dust in the soil around the roots or spray with any strong tobacco solution.

A very handy way to sow tiny seeds evenly is to put them in an old salt shaker and sprinkle them slowly into the trench.

The blue anchusa is too liable to grow very rank and unsightly unless the seed pods are broken off as soon as they form. It is very easy to get new plants at this season by digging up a root, cutting it into pieces about two inches long, and planting the pieces in damp sand.

PHRYNOSOMA MIO

The Harmless Horned Toad of the Warm Sands

by Marjorie Shanafelt

PHRYNOSOMA Mio scrambles over the laboratory table, amongst the rocks and microscopes, and, little sun-worshipper that he is, follows the sun as it creeps from one end of the table to the other. When there is no more sun, he buries his small self in the sandbox, with only his head sticking out.

HE LIKES GROTESQUE POSITIONS
One wonders what has become of the tummy so full of mealworms

When Phrynosoma first came, it was cold and damp. The sun didn't shine. Day after day it pulled heavy gray clouds over its face. Phrynosoma had journeyed from a sunny land where there were warm sands to scamper upon and warm hummocks on which to toast himself. He didn't like it here one little bit. He was cold,—so cold he couldn't even eat. Then someone had a happy thought and warmed his box of sand over a bunsen burner. He liked that so well we wondered how we could keep his sand warm all through the night. Remembering the warm bricks that mothers tuck into children's beds on cold, winter nights, we warmed a brick, too, and sat the little sandbox on top of it. Phrynosoma as good as said "Thank you!" for he went to bed at once. In the morning it was a shock to find an apparently empty sandbox. Phrynosoma had evidently gotten away! But no! On thrusting inquiring fingers deep within the sand, we found him sound asleep in the yet warm sand.

At last the sun quit sulking, cast aside the dark cloud veils, and smiled down upon the world. Behold it was Spring; flowery, sunshiny Spring, and Phrynosoma was comfortable and happy once more. Forgotten was his long journey from California, by mail, shut up in a pasteboard tube, because somebody thought it would be funny to have such an ugly little fellow tumble out of the package when it was opened by an unsuspecting somebody else, many, many miles away.

LITTLE SUN-WORSHIPPER
He moves as do the rays of the sun seeking desert warmth

Phrynosoma Mio is really a very suspicious little fellow. His main idea seems to be, "If I don't eat you, you'll surely eat me." Therefore, he regards each new advance as the action of an enemy. The fact that my fingers give him mealworms one day doesn't mean anything to him on the next. Every time my fingers come within his range of vision he comes to attention, puffing himself up until he is as round as a picnic bun. He looks ferocious! He knows it, so do you. His head rotates slowly as he follows the least movement of those dangerous-looking fingers. Suddenly he gives a wild jump straight up into the air and a slit of vivid pink shows above the rows of spikes that border his jaws. There is an outpouring of what he probably thinks terrifying hisses. They are really ridiculous and we only laugh at him. No matter how many times I try, the advancing fingers call forth more hisses. If the fingers still insist on advancing, he throws himself like a silvery dart, and, luck favoring him, gets a grip on a fold of flesh. It doesn't hurt much, and he, feeling somewhat mollified, begins to calm down.

He never will take a mealworm from my fingers, though. It must be put down so that Phrynosoma Mio may stalk it. This is quite a ceremony. The mealworm, poor little lover of dark and mealy corners, knows that such an open situation spells danger and hastens away in search of cover. Phrynosoma doesn't lift a foot, but his funny, spiky, little head, turns, turns, turns, oh so slowly. Then all of a sudden the mealworm has vanished. There was only a dart of gray and a flash of pink to give a clue as to what happened to the scurrying worm, unless you catch the ripple of an extra gulp on the silvery surface of Phrynosoma's throat. If he weren't a toad, I'm sure he would be a little pig, for he eats until he cannot hold another worm, not even a tiny one. Hating to quit, even so, he puts his foot down on the next mealworm to appear and holds him captive until there is a proper amount of tummy space available.

Having gained his own way, and having a very well-fed feeling, Phrynosoma becomes reconciled to the fingers and allows himself to be picked up and fondled. He finds the warmth of one's hand pleasing and snuggles down contentedly. The hand completely engulfs him, with the exception of his tail that sticks stiff-

A SUSPICIOUS FELLOW
He will puff himself like a picnic bun when angry

ly out from between two fingers. That tail never will curl up inside. Sometimes he perches on the end of my finger, his fore-feet, so like small hands, clasped about it for support. In fact, after he is well-fed and warm, one can do most anything with him. One can place him in the most grotesque positions in which he will stay for several moments at a time. He doesn't mind being leaned up against a jagged piece of granite, nor being propped up with a bit of rock salt, although he keeps his sloe-dark eyes upon us all the time. He has forgotten to be a puff ball. The air has all escaped and he is as flat as two pieces of paper laid together. One wonders where his tummy is with its load of mealworms. Turned on his back he is as concave as half of a rubber ball. Suddenly he flips himself over, scurries across the table, and usually leaps wildly into space. The first time I expected to pick up a dead Phrynosoma, but he always landed right side up and unhurt.

Thousands and thousands of years ago, when this world was very young, there lived most monstrous animals called Dinosaurs. They had spikes and spines just as Phrynosoma has, only many, many times bigger, and more dreadful looking. Phrynosoma looks at me and I look at him; in imagination I see him grow bigger and bigger, fifty times as big, until he is as tall as the tree tops. His mouth is so big it could swallow four men at a gulp. I can hear the dreadful snap of his jaws as they shut on a morsel of fresh meat. The hiss he makes is a breath so strong that it bends the young palm trees almost to the ground. His great heavy tail, covered with dreadful sharp spines, makes the earth tremble when he slaps it on the ground. I feel myself running, running in abject terror of that dreadful beast. Then there is the sound of a falling rock. I give a little scream! So well have I day-dreamed! There is a scramble over the edge of my book and I laugh, for here is no hideous Dinosaur, but a dear little horned toad who wants another mealworm and a warm spot in the hollow of my hand.

IN CASE OF FIRE

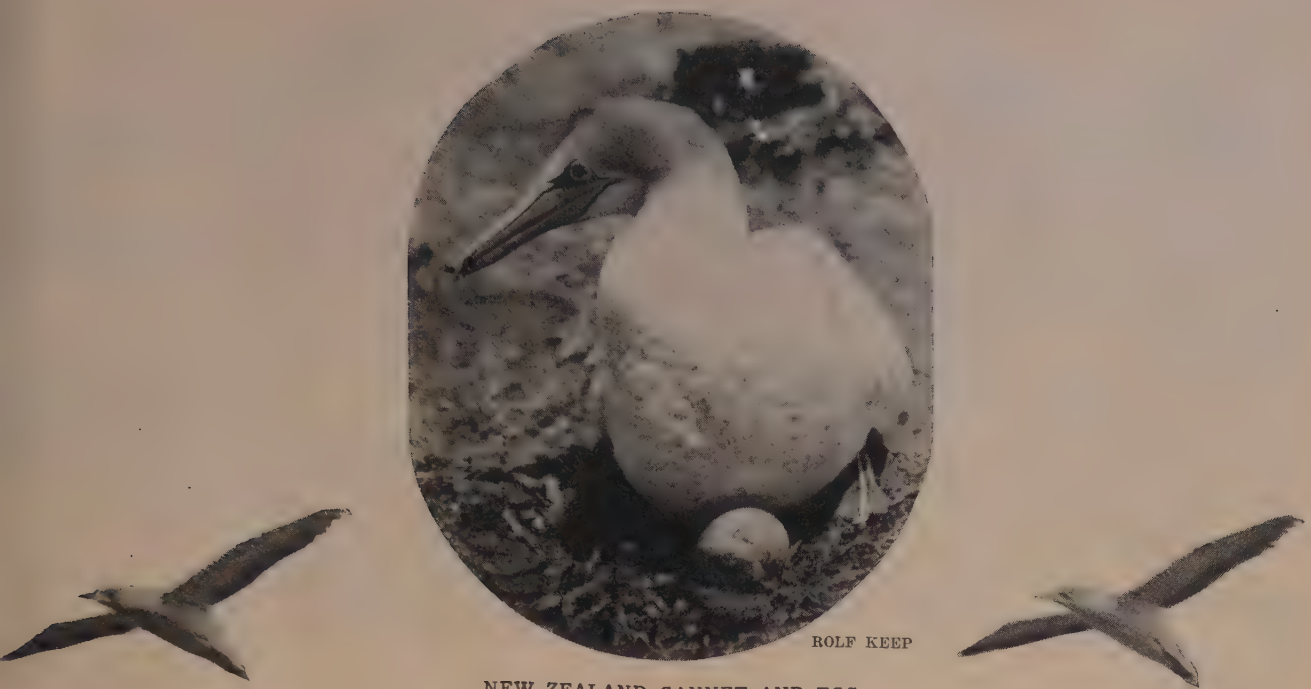
The signs say, "Leave by the nearest exit." It might upset this dove family.

ODD PLACE *for a* DOVE'S NEST

If the mourning dove would show better judgment in the selection of its nesting place, the proportion of doves in our wild bird life would be greatly increased. It is no unusual thing to see the nest of a dove built far out on a fragile limb. Usually such nests and their contents are dumped to the ground with the first rain or wind storm and the foolish dove rebuilds in the same spot or a new one that is no better.

Last spring in the latter part of April a cooing dove was noticed perched on the steps of the fire escape of the Physical Science Hall at the Kansas State Agricultural College. In a day or two she began building a nest on the iron bars of the steps and used in its construction more material than is usually used by a dove for that purpose.

In time, one, two, three and finally by the early part of October, four broods of two each were reared, full fledged, and left the nest without mishap. During the whole season the male bird was never seen. The mother bird seemed to know no fear as the room was usually full of students moving about their work in the laboratory. The last brood was hovered by the mother while workmen for some eight or ten days used the fire escape until they completed some repair work going on in the building. This dove, having found a place where she could rear her brood in safety was wise enough to stay.



ROLF KEEP

NEW ZEALAND GANNET AND EGG
Southern relative of Marga guarding her prospective offspring and nest

MARGA, *the Gannet*

by Donald Culross Peattie

PART TWO

MARGA, dropping toward the surface of the sea and struggling for flight, was convinced it was her last minute on earth, or rather in air. She hit the water with a splash and immediately sank, but in six seconds she had bobbed to the surface again, her marvelous new feathers and oily skin no wetter than a duck's. She could discern the Old Ones wheeling and screaming above her, and she tried to lift her wings in flight, but she could not get off the water.

She thought she was doomed. A big fish would come now and pull her down by the leg. She did not realize that no young gannet, once it has alighted in the sea, can get up again for more than two months.

Marga paddled about in panic. Suddenly, to her terror, and then relief, she collided with Jan. He recounted very much the same experience that she had had. They found thirty or more youngsters of their own age, bobbing on the water, and presently when the No-wings had gone away at last, the Old Ones fluttered down to their children on the waves. But many parents looked in vain for their babies. They had fallen on the rocks, or failed to rise from the first plunge.

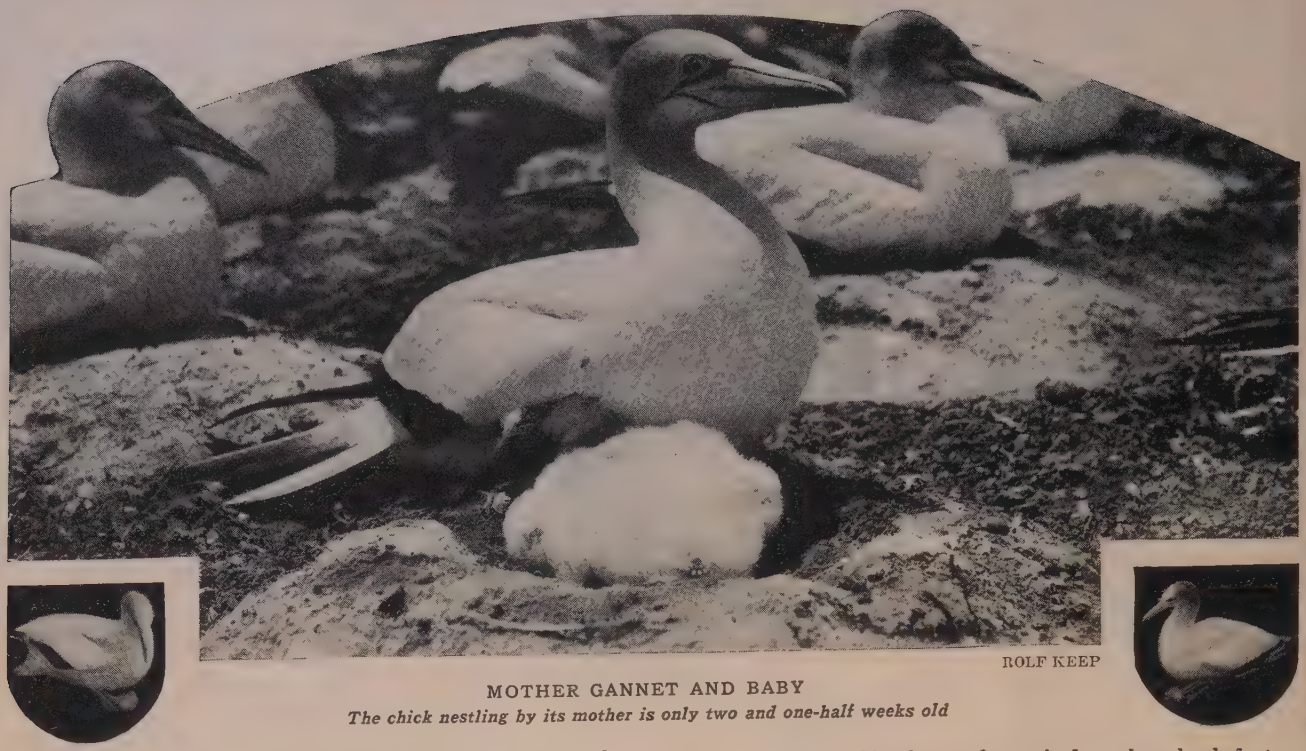
Here was a quandary for the flock. The little fleet of helpless babies could neither get back to their nests nor make off through the highroads of the air for the Hebrides. With a gabbling of hoarse voices the Old Ones met in council and decided that they should fly slowly north, acting as a convoy to the little ones. Further, the Old Ones realized, if the fledglings could keep afloat a few days longer, the great seething shoals of pilchards and sprats would come down the Channel on their regular migration, and then there would be small fry which even the children could catch.

And the migrants came, in a few days' time, a mighty army of them swimming in a phalanx, as one fish—gleaming, finny food for the starved gannets. Like a ravening pack the birds fell on the silver schools and ate and ate, but still the boiling, fighting fish swept on, their numbers undiminished. Marga and Jan, and all the youngsters had their share, and when the last fin of the undersea hordes had flashed away, the gannets moved slowly northward into the gathering cold of October, the Old Ones forming a fierce guard against gulls and sea eagles as the little troupe crept forward.

ROLF KEEP

IT LOOKS LIKE RUBBER
Newly-hatched chick who is a rubbery-appearing one day old

And then there came a day when, suddenly, before she knew what she was doing, Marga was flying. For the first time the air rushed through her strong young wings; for the first time she rose, lighter than



ROLF KEEP

MOTHER GANNET AND BABY

The chick nestling by its mother is only two and one-half weeks old

air, its conqueror, rose exultantly aloft up into the blue, among her comrades. It seemed as though there was nothing in the world but the blue of the air and the blue of the sea, and heaven and all the atmosphere filled with the rush and storm of white wings.

At last, toward the close of a cold, rough day, Marga first saw the great sterile rocks looming out of a scowling sea. Even her poor ears could hear the menace of the breakers churning and hissing in a white combat with the rocks. Loud, loud, Ailsa Craig, loneliest and wildest of them all, roared out her warning to the ships of the No-wings. Wild, wild, the wind screamed through the chill grasses on her inaccessible tops. The thrift was still beautiful in death; the little bright eyes of the campion had long ago winked out.

With the others Marga circled round and round Ailsa Craig, now nearly deserted by its inhabitants who had most of them long since flown off for the fishing banks. The Old Ones found what they were looking for, a ledge unoccupied by the Ailsa gannets. They could beg that, without having to fight for it. True, it was not inaccessible to the No-wings, which was probably why the Ailsa gannets had not taken it, but it would have to do. By intermarriage with the Ailsa gannets, the younger birds from Lundy might acquire title, in time, to safer sites.

Having located their new home, the whole tribe took wing now for the open Atlantic, sleeping at night on the waves, but so far out at sea that No-wings need not be feared. For two months long they ranged the wild waters between Iceland and Norway, and then, partly following the fish, partly driven before a howling North wind, they fished and were battered all the way to Spain.

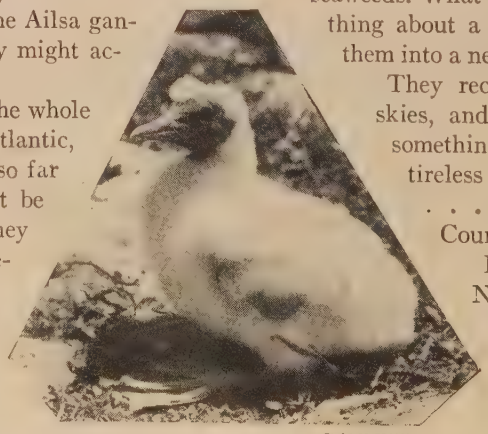
And there in the warm blue waters Marga learned the expert diving for which all gannets are famous. She learned to circle a hundred feet above a shining shadow in the water that meant a school of mackerel, to mark the biggest fish with her telescopic sight, and then, wings held to cut the air, drop like a bolt of iron upon the prey. As she hit the water she always instinctively protected her eyeballs by closing the membrane over her eyes, which is the lid of a bird, because the gannet is a heavy bird and dives from a great height so that its fall has terrific impact. Consequently Marga had to bite in the dark at whatever fish she could catch. If she got one in three dives she was lucky, but she could dive and rise thrice in five minutes.

There was always the danger that she would snap up a gurnard and the next instant find its sharp dorsal fin sticking immovably in her throat. Jan's father choked to death that way off the coast of Spain, which taught Marga a lesson.

At last the ice floes crept back from the north Atlantic; Spring called softly over the ocean. Things that the gannets had forgotten they could suddenly remember now—thrift flowers and campion, cool grasses and great brown ribbons of fresh kelp and little green bladdery seaweeds. What was it you did with them? Something about a nest. Yes, that was it, you wove them into a nest.

They recalled steep cliffs and soft May skies, and billing and kissing. There was something about a sudden flight, and a tireless pursuit. What was it all about? . . . . Courting? Yes, that was it. Courting!

But not here, not here. Back in the North. On the cold clean rocks, in the keen North air. North, where June was like the December of these hot southern lands. Back to the North then! Are we all here? Shall we go now? We're off! Hurrah! *Carra! Carra-a-a-a-a-!*

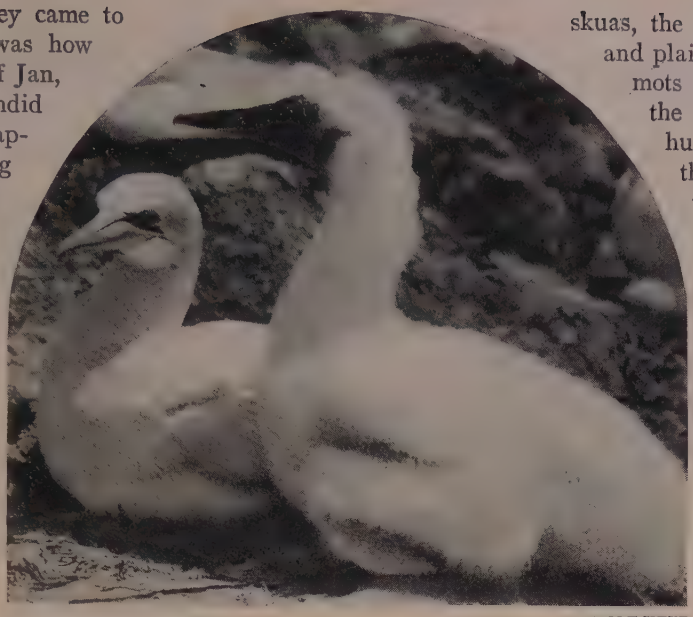


ROLF KEEP

MOVING ABOUT A BIT

A three weeks old New Zealand gannet chick explores around

And that was how they came to Ailsa Craig; and that was how Marga became the mate of Jan, grown to a fearless, splendid young drake now. It all happened under the arching blue sky, in the windy grasses, on the cliffs where the little arctic blossoms nodded. And then Marga sat for days and days on the big white egg, with her webbed feet holding it under her, until she ached with cramp, and then Jan would sit on the egg for her, while she stretched her wings for a few turns over the water.



ROLF KEEP

BIGGER THAN ITS MOTHER

At four weeks the youngster has grown to considerable size. Much is in its downy coat

Then at last came a tapping from inside the tiny, secret world, and little Bobo pecked his way out. To Marga Bobo, hideous as he really was, seemed the most beautiful chick in all the world, and she fed it and warmed it and flung herself over it when the gulls and eagles pounced down on the rock from above.

And how proud Marga was when Bobo learned to swim and fly! And how proud she was of the twenty pounds of fish a day which Jan could catch for his family, and the way he pecked and punished the fierce old bachelors who had come ogling her. As for the old shrew of a female gannet on the next nest, who gave Bobo a rap on the head, Marga herself finished her off in no time.

Then to the banks once more, as Autumn drew on. Never had Marga dreamed of such fish, or such multitudes of birds. There were whiting, cod, sand eels, pollacks, coal-fish, herring, mackerel, haddock, pilchards, garfish, sprats and anchovies, all marching along in a mighty ribbon, below the shifting surface, a hundred miles long, darting, wheeling, eaten by tens of thousands, yet never diminished.

And the tribes of sea birds! ravenous, quarrelsome, crafty gulls, the weak little razorbills, the terns and the skuas, the wild petrels, the murres and plaintive whaups, the guillemots and, as numerous as all the rest put together, the hungry puffins that dropped through the air with a terrifying WHISH!—terrifying till you got used to it.

What a crowd! What a babble of squealing, yelling, fighting, diving birds! What millions of finny prey! What a catch! What a glorious life!

And so the next ten years passed away, swift and happy save when fear swept the colony like fire. True to prediction, Bobo grew up and married a beautiful little gannet named Ailsa, after the rock of her birthplace, and so acquired title to a place on the safer ledges, after a bloody battle wherein Ailsa sat by and watched her husband kill her two jealous brothers. But Marga and Jan kept to the ridges alloted to the Lundy birds when they first arrived, and raised chick after chick, one egg a year, though on several years the No-wings came and stole the precious eggs.

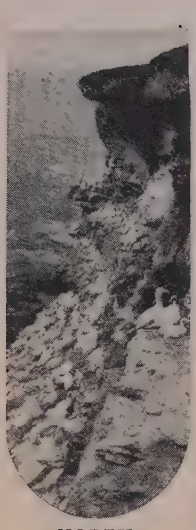
And there were other tragedies. Sometimes a diving comrade was caught in a submarine fishing net; others were swept up in a great wind and blown away, never to return; there were comrades who plunged into lighthouse light, and endless chicks that died by accident or were pecked to death by old birds made irritable by the nesting period.

Marga never knew what it was that happened to Jan. But there came a time when Jan went away; he had only gone out to sea to bring back some haddock. There were No-wings in boats, fishing not far off; they had sticks that went *Crack!*, and killed birds sometimes. From time to time, for sheer sport, one of the No-wings would raise his stick. *Crack!* Perhaps one of those cracks got Jan. Perhaps not, there was a chance,

ROLF KEEP

ACQUIRING THEIR SPECKLED COATS

New Zealand gannets of about seven weeks of age begin to change from their white down of infancy



NORTH
A ledge in Quebec

SOUTH
A ledge in New Zealand

THE GANNET FLOCK ON ST. BONAVENTURE
These are the ledges that Marga knew and to which she came in the last days of her life

a mere hope, that he was still alive, caught by a wind and blown away, lured off by a fleeting school of fish. Marga waited and waited. She still hoped. But in her heart she knew Jan, strong, beautiful Jan, was dead.

And when winter came and the gannets all went winging out to the great fishing banks, Marga went this time alone. For the first time in ten years she flew without her kind, strong companion at her side. All the other birds had mates; all the others flew in pairs except the little stripling males, the cross old bachelors and the little maiden gannets close to their mothers. Only she, Marga, most gleaming and beautiful of them all, flew alone; alone, her heart aching.

Once more the great regiment of fish moved on, a shining shadow beneath the waves. Once more the gulls screamed and the puffins tried to crowd everybody out, and the gannets, outnumbered, but the finest divers, the keenest of sight, the surest of aim, took in the mightiest catch. The skies grew darker every day; the snows fell and fell in the icy sea with a little hissing noise. Even the gulls were cold, but never the gannets. Then a howling east wind sprang up. It blew a little mewing, pleading flock of curlews from Ireland out to sea.

"Go home, shore birds, waders, land-lubbers!" jeered the gannets and kittiwakes.

"Go home, shrimp-eaters, sickle-bills, knock-knees!" screamed the terns and petrels over the uproar of the gale, which all but drowned the sound of their calls.

But the little curlews could not get home. The east wind blew them, crying and pitying themselves, out to sea. And the storm rose and rose in power, till the gannets became parted from each other. Even the gulls could not resist it. Day by day it scattered more of the host of feathered fishers. Day by day it rose higher, rising to a screech of anger. And at last Marga, the strong-winged, the powerful, was swept away too, out over the lonely sea.

Marga gave in utterly, and for blinding days and freezing nights she was tempest tossed. Few gulls would have survived such a terrible journey; no other gannet could ever have lived through it. Swept ever onward, starving, exhausted, she was flung westward, westward. And then one day, when death had nearly closed those sharp eyes forever, the wind dropped and let her gently down on a soft sandy shore, on the edge of a dune that looked inland toward a sunny land.

"*Carra-carra,*" cried someone.

Marga looked around her. There, not far away, was a little group of gannets walking about on the sand.

"*Carra,*" she answered feebly, and sank to rest.

What happened thereafter Marga does not well remember. When she revived she could recognize no surroundings. This was a warm gentle land, yet it was not Spain. She asked the gannets the way back to Ailsa, to St. Kilda, to the Bull, to any gannetry in Europe. But these strange gannets, who spoke her language with a different accent, had never heard of those places. They told her she was in South Carolina, and all their talk was of Bonaventure in the Gulf of the St. Lawrence, whither they were turning back, for spring was stealing up from Florida, and by June it would flood Canada with blue skies, and the alpine saxifrage would nod from the cliffs.

"Come with us, Strange One," they coaxed, "Come with us. *Carra!*"

KILROY HARRIS

AN AUSTRALIAN GANNET
Photographed on its nest at Cat Island in Bass Strait

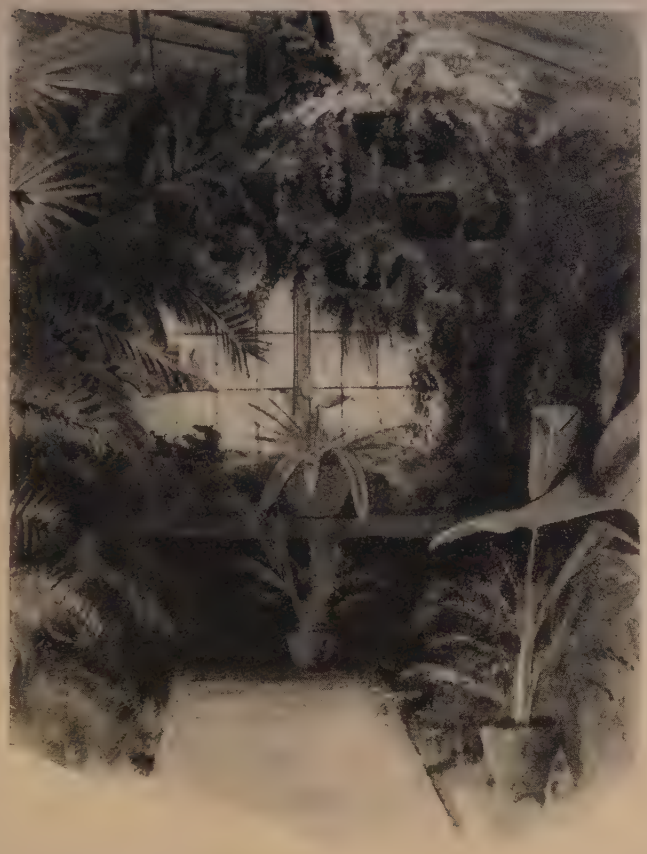
And that is how Marga came to America and found and dwelt among the gannets of the New World. She lives on Bonaventure still, fairest of them all, though an old bird now. Sixty summers has she seen. But though so many handsome males have come a-courting, Marga has never heeded their ways of love. They call her the Lone One.

The HARMONIES of Nature—RACE

by H. W. Shepheard-Walwyn

Illustrated by R. Bruce Horsfall

First of a new series of stories by the English writer who charmed our readers last year and whose new book is soon to appear.



IMAGINE A BEE IN AN ORCHID HOUSE!
Such was the problem that confronted the horticultural rector, as our author tells

I ONCE heard a playful suggestion that it was chiefly for the purpose of providing entertainment for the frivolous, that the elaborate Table of Affinity at the end of our prayer-books declares so emphatically that a man may not marry his grandmother, his sister or his aunt. Anyhow, one can say with truth that the inventory in question has proved a perfect godsend to many a distracted parent at a loss for something to keep her small belongings happy during the sermon. The great delight, I remember, in my own case, was to try to discover whether it ever repeated itself. That nothing had been left to chance was quite evident!

At the same time, it is open to doubt whether even those of riper years always recognize the monumental truth which underlies the brain-addling complexities of this time-honored proclamation. What is it, after all, but simply an echo of one of Nature's greatest laws,—that omniscient Mother-force which is for ever striving to keep her cherished races strong, and so can never lose sight of the danger of deterioration that is undoubtedly incurred by close relationship in any union of their members? Nature has no Table of Affinity branded with indelible characters upon the rocks and earth and trees,—but that is not to say that she cannot devise plenty of methods equally effective to prevent her own particular children from marrying their grandmothers, their sisters or their aunts.

All very well, no doubt, in such departments of the animal world as come under the control of human agency, but what about that vast creation where the written law is an unknown quantity, where everything living is uncontrolled and free to mate wherever its fancy may direct? Consider the boisterous health, the splendid physique, the comparative freedom from disease, which usually distinguishes wild creatures left to themselves, and you may well ask,—how is it done? You might even go a step further and ask another equally natural question. How comes it, in a world where, with all things living hob-nob together, with self-control completely at a discount, that one does not find even those of totally different races interbreeding with one another? Who prevents it? With none to tell them what to do, and none to say them nay, what is there, in fact, to prevent the entire animal creation from gradually resolving itself into one unholy jumble of confusion worse confounded—horses with antlers or cows with wool; rabbits nesting in the trees, or squirrels swimming in the rivers; butterflies kept in hives for their honey, or hedgehogs in coops for their eggs; perhaps, even in time, elephants with fins or antelopes with feathers? Truly a vision of "mixed biscuits" at which even the shade of the immortal Gilbert might well stand aghast! Yet the wonder is that it has not happened long ago, when you think of the appalling mongrels that actually do happen every day amongst dogs or fowls.

So it would have happened long ago, if Nature had not taken drastic steps to prevent such a cataclysmic outrage upon her priceless Harmony of Race. The means that she employs is rather strikingly illustrated in the case of a remarkable beast to be seen at the Zoological Gardens under the name of the "Tigon". The parents of this handsome creature were a tiger and a lioness. Now we have here an obvious mistake on Nature's part,—a very rare mistake, but still a mistake that might produce awkward consequences if suffered to pass unnoticed. What will Nature do in a case of this kind? The answer is best set forth in the actual words with which the Superintendant replied to my appeal for confirmation of my own impressions on the subject. "In

all probability", says that eminent zoologist, "this animal would prove to be incapable of reproduction". Nature may have had the misfortune to make a mistake—but she takes jolly good care not to let that mistake go any further!

That is how she contrives to keep her races pure. There is still the question of keeping them strong. Has it ever occurred to you to wonder what becomes of a young family of birds or animals when old enough to fend for themselves? What is to prevent them from staying where they are, for instance, and upsetting the apple-cart by mating amongst themselves? Nothing beyond the fact that Nature, recognizing the danger, has taken the precaution to plant in the minds of all gay young sparks an uncontrollable yearning to scatter abroad as soon as they arrive at years of discretion. Be the old homestead never so luxurious to live in; the larder never so plentiful to live on; the little sisters never so agreeable to live with, sooner or later will the pangs of "wanderlüst" grip the hearts of the young men of the family. Sooner or later comes that inevitable day when several empty places will suddenly appear at the parental board. None mourns their loss. It is but the law of Nature. Just as it is equally a law of Nature for the little sisters, who have been left behind to keep the home fires burning, forthwith to apply themselves with all speed to the task of broadcasting wireless invitations to other gay young sparks who may have chanced to stray into the neighborhood,—likewise in the grip of the "wanderlüst",—to come and assist them in that process.

CATKINS NOT ALWAYS NUTS
The promise lies within them but the nuts depend on an obliging wind

So far, so good. But what about the kingdom of Flora? Or doesn't it matter to the same extent in the floral world? Matter? Just try to picture the pandemonium of "mixed biscuits" that would result if Nature had been too busy to give the same attention to this particular province of her wonderful realm! Imagine your feelings, for instance, upon suddenly discovering that the new rose-bushes had taken into their heads to give you a fine crop of dandelions, or that the daisies on the lawn were beginning to bear blackberries! Of course it might prove rather a nice surprise to find the privet hedge planted last Autumn unexpectedly covered with strawberries, or the Virginia creeper over the porch dangling clusters of lupins. But suppose the gardener were to announce one morning;—"Beggin' your pardon, sir, there won't be no peas this year,—they be all comin' up laburnums!"

Idiotic though it may sound, this is unquestionably what one might have to expect, were it not that Nature has laid down rules here every whit as stringent as those in force amongst the various races of the animal and feathered worlds. So you will find that the pollen from a snowdrop is of no use whatever for fertilizing a violet or daffodil, nor will the contributions from a field of cowslips have the remotest effect upon the buttercups sprinkled amongst them. Of course there does exist a certain danger of "mixed biscuits" among flowers of the same or closely-related species. Witness what usually happens if you plant a colored primrose in a plot of the natural variety,—but an instance of this kind could not really be regarded as a violation of the main principle. Many of us know from bitter experience the exasperating habit common among lupines and sweet peas of producing a second edition quite different in color from their parents, while any orchid-fancier will testify to the awful catastrophe which might ensue if a bee should happen to obtain access to the sacred precincts. I cannot resist giving you a rather delightful story of a certain notorious enthusiast who had the charge of a neighboring parish in the days of my childhood in Yorkshire. It was rumored that the reverend gentleman did not always allow the regard for his cure of souls to stand in the way of his devotion for the cure of orchids!

Shortly before service one Sunday morning, upon making his usual round of the orchid-houses, the Rector was suddenly transfixed with horror at sound of a significant buzzing as soon as he opened the door. You who have ever attempted to catch a bee in a hothouse crammed with valuable and delicate specimens, can fill in the next few minutes without assistance. The worthy Rector was still making frantic efforts to outwit "that demned elusive" bumble-bee, when the merry peal of bells across the road suddenly lapsed into the suggestive monotone that heralded the opening stages of the service. Purple in the face and streaming with perspiration,—for his God, or his own good living, had seen fit to fashion his physical form on the same generous scale as that of the bumble-bee,—he was still at it hammer and tongs when the old Irish verger appeared panting on the threshold, all evidence of much perturbation.

"The Voluntary's begun, yer riverence."

"Shut that door, Pat!"

"May it plaze yer riverence, the Voluntary's begun!"

"Tell him to play it through again, Pat."

The village schoolmaster played it through again, pat. Then he

NOW AND THEN THERE IS A MISTAKE
As witness the "Tigon", offspring of tiger and lioness, born at the London Zoo

played everything he knew, which, judging from the average village schoolmaster of the Victorian era, was probably not much, though probably equally pat. And then the sporting Squire-churchwarden appeared on the scene of conflict.

"Shall I make a start with the Lessons, old chap, just to fill in the time?" Can't you see the twinkle behind his eye-glass as he said it?

"Not till you've helped me catch this blankety beast! I am not going to have that hundred-guinea orchid spoiled,—not if they have to sit there all day!"

Memory fails to recall how long the congregation actually did have to sit there champing their bits, whilst the two principal pillars of their church rollicked away that Sabbath morning in the Rectory orchid-house.

Now if one solitary individual can produce such a storm in the botanical tea-cup, just imagine the perfect chaos of "mixed biscuits" that might be created in the unrestricted freedom of the countryside, if Nature did not put her foot down rather decidedly. Nor is this all. There is also the other point to be dealt with, a danger this time that might arise within the home circle, the danger of a flower being tempted to marry its grandmother, its sister or its aunt—its sister, at any rate, for the others are not regarded as blood-relations in the kingdom of Flora. You have only to remember that the majority of flowers contain both the sexes bottled up in the same room, so to speak, to appreciate the seriousness of such a danger. In case this particular point is not quite clear to everyone, let me briefly explain,—with all due apologies to those who have known it since they were born,—that the seed-producing organ is represented by the long green spike that you generally see growing in the centre of the blossom,—so very conspicuous in lilies,—which is known as the "pistil". The male element resides in the stamens, which bear the golden pollen-dust, and the process of fertilization is effected by this pollen being transferred from them to the stigma, or end of the pistil.

Now what is to prevent the passing bee, when visiting a flower, from brushing off the pollen and dropping it upon its own stigma? Would it matter if he did? Nature appears to think that it would matter—in most instances, that is—else, why should she be at such pains to invent dodge after dodge to prevent such a thing occurring? Take the case of that "beloved vagabond", the foxglove, which lends such unique enchantment to the banks and braes of our countryside. The difficulty is circumvented here by the very simple dodge of preventing the stigma from reaching maturity until her brother stamens have all retired from active life. By the time that little sister stigma arrives at marriageable age, the rest of the family are withered and the last of their pollen gone,—the coast being thus left clear for the bees to bring her contributions from other blossoms.

BUMBLEBEES "MIX BISCUITS"
Especially if they carry on their operations among the members of the orchid family

A few instances may be found in which Nature departs from the usual stuffy method of cramming a whole family together in the same room—indeed, there are certain cases in which it is not even considered *comme il faut* for the two sexes to grow on the same plant. Or there is the case where both sexes are produced upon the same plant, though not permitted to inhabit the same blossom.

"Just look at all those catkins! *What* a year for nuts!" is an exclamation frequently heard from visitors to the country in early Spring. And no doubt it would come as a sad shock to their enthusiasm to learn that not all the magic of the Universe could avail to wheedle a solitary nut out of all those catkins put together! The embryo nuts are probably *there* right enough, lying dormant in the form of tiny crimson stars, for all the world like miniature editions of the sea-anemones that children love to collect in pools upon the shore. These are the female flowers, patiently waiting with outstretched fingers to catch the showers of pollen-dust, which the wind obligingly wafts across from those strings of fascinating lambs'-tails hanging in golden clusters on trees upon every side.

In conclusion, one may perhaps be pardoned for flying off to Brazil for a moment, in order to present a strategem which, for sheer ingenuity, might be considered as almost without parallel in this wonderful kingdom of Flora. The jungles of this tropical clime produce a certain orchid that has the lower part of its blossom cunningly fashioned in the form of a cistern, above which are fixed a couple of pipes, and from these a perpetual stream of liquid resembling water keeps drip-drip-dripping into the cistern beneath, while a small overflow pipe at one side prevents it from ever becoming more than half full. Immediately above the cistern has been fixed a sort of prophet's chamber with two side doors, the walls of which are ornamented with a series of curious fleshy ridges.

Focus the lime-light upon these ridges for a moment. What can be their attraction it is impossible to suggest, but the fact remains that the huge blossoms of this particular orchid are perpetually surrounded by crowds of bees, all striving and shoving to force their way in with the object of gnawing off the mysterious ridges. The obvious result of this unseemly behavior is that one after another of the visitors finds himself pushed into the cistern, there to flop about in the water in a fury of indignation until his wings are too wet to fly, which means that his only way of escape is by crawling down that over-flow pipe. It is nothing unusual to see a continuous queue of sadder and wiser bumble-bees escaping in this fashion after their involuntary bath.

Now what is the point of all this apparent much-ado-about-nothing? Examine that overflow pipe, and you will find that it is roofed over by the column which contains the stigma and stamens of the blossom. The point is that Master Bee, in forcing his way down the narrow channel, cannot possibly avoid rubbing his wet back against the stamens, with the result that some of their pollen adheres to his fur. Here it sticks until the insect proceeds on his way to visit other blossoms, when a portion of his burden is automatically transferred to the first stigma that happens to be in the right condition to receive it.

It does seem rather hard luck on the bees, but such an instance as this serves to show how Nature is for ever working and striving, not only to preserve her priceless purity of race, but to maintain withal that standard of excellence which she has been at such pains to create.

My neighbors went away one day,
And left this tiny mite of cat.
The next year when they sauntered home,
He looked disdainful,—just like that.

MARIE WIXON

A HEROIC JULY CONSTELLATION
Hercules is shown with the skin of the Nemaean lion and apples of Hesperides

HERCULES

Hero of the July Skies

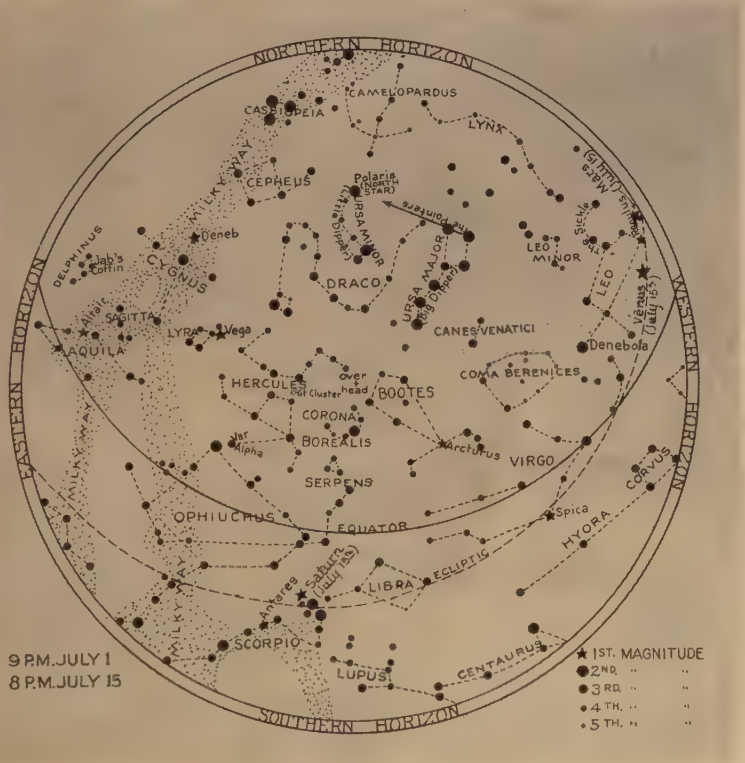
by Isabel M. Lewis

THE HUGE constellation of Hercules, which contains no stars of first or second magnitude, but many of the third and fourth, lies between two of the smallest star groups in the heavens, Corona Borealis, The Northern Crown and Lyra, The Harp. It is named for the famous hero of Greek mythology who was noted for his strength and valor and for the performance of the Twelve Labors which included the capture of the Nemaean lion and of the triple-headed monster Cerberus that guarded the entrance to the lower regions, as well as the slaying of the sleepless dragon that guarded the tree of golden apples in the garden of the Hesperides.

Success in these efforts is symbolized in the representation of the figure of Hercules in ancient star charts with the lion skin thrown over his shoulders, his foot on the head of Draco and an apple bough bearing the golden apples in his left hand. Some ancient maps substitute for the apple bough, however, the triple headed Cerberus. Hercules is pictured as resting on one knee and was known also as "The Kneeler."

In July Hercules will be found almost directly overhead in the early evening hours in latitude forty degrees north and directly south of the far northern constellation of Draco, whose tail twines around between the two dippers and whose head and body lie between Hercules and the Little Dipper. The head of Hercules is marked by the interesting orange and greenish-blue double star, Alpha Herculis, which also varies in brightness irregularly. For the possessor of a telescope there are many double stars to be found in Hercules and there is in addition one of the finest objects in the heavens, the Great Hercules star cluster which may be seen as a faint cloud of light, even with the naked eye, on a clear moonless night. This cluster lies on the western edge of the keystone-shaped group of four stars that outline the hero's body in the position shown on the map. Although it may be seen to some advantage in a three inch telescope it needs a large telescope to show the thousands of tiny points of light, each a magnificent sun many times more brilliant than our own sun, that are apparently crowded close together into a globular shaped group yet actually so far apart one from another that each sun may have its own family of planets some trillions of miles apart.

The Hercules cluster is estimated to be at a distance of 35,000 light years from the earth, that is, it is so distant that light takes



MAP OF THE SKIES IN JULY
To use hold over the head with the top toward the North

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35,000 years to span the distance that separates it from the earth traveling at its unimaginable speed of 186,000 miles a second. The most powerful telescopes show fully 100,000 stars in this great cluster and since at this distance it is known that our own sun would be hopelessly invisible even in the greatest telescopes it is certain that all of these tiny points of light that we glimpse in the Hercules Cluster are in truth far more brilliant than our sun. In addition to these visible stars there may be many others in the Hercules Cluster equal to or inferior to our own sun in brightness that are too faint to be seen in our telescopes.

It is in the general direction of the constellation of Hercules, or rather toward a point on the boundary between the constellations of Hercules and Lyra, that our sun with its family of planets is known to be speeding at the rate of twelve and one-half miles a second or about a million miles a day.

The most conspicuous constellations in view this month in the evening hours are Leo and Virgo far over in the west and southwest, Boötes with its magnificent Arcturus just to the west of the meridian, Cygnus and Aquila well up in the eastern sky, the Big Dipper in Ursa Major in the northwest, Hercules, Lyra and Corona nearly overhead, Serpens, Ophiuchus and Scorpio due south on the meridian and the little inverted milk dipper in Sagittarus now rising in the southeast.

The Milky Way is now seen to fine advantage in the eastern sky, extending from Cassiopeia and Cepheus far over in the northeast, through the Northern Cross in Cygnus and below the Cross dividing sharply into two branches. One of these passes through Aquila to the tail of Scorpio and the other through Ophiuchus toward Antares in the heart of Scorpio, both branches disappearing below the southern horizon south of Scorpio. To see the Milky Way at its best one must choose a clear, dark night when the moon is not in view and be far removed from the glare of city lights. No city dweller ever sees the Milky Way in all of the splendor and grandeur that is so frequently revealed to those who dwell on the prairies or farms or by the sea or best of all in the desert or on lofty mountain peaks, where the air is clearest and the stars appear most brilliant and seemingly countless in number.

The four planets Venus, Mars, Saturn and Jupiter may now be seen in the evening hours though Jupiter, which is now in Pisces, will not rise until after ten o'clock. On July 9 Uranus and Jupiter will be in conjunction so this will be a good opportunity to observe Uranus. It will be found only half a degree north of Jupiter and will resemble a star of the fifth magnitude.

Venus will reach its greatest distance east of the sun on July 2 and at this time will look like a half-moon in the telescope. It will be very close to Regulus in Leo on July 5. During the month it will continue to increase in brightness and will be a magnificent object in the west for more than three hours after sunset.

Mars also is in Leo this month and will be about a degree north of Regulus on July 23 but noticeably inferior to Regulus in brightness. Saturn is a brilliant object in Scorpio a little to the northwest of Antares and in position for observation quite low in the south.

H. ARMSTRONG ROBERTS

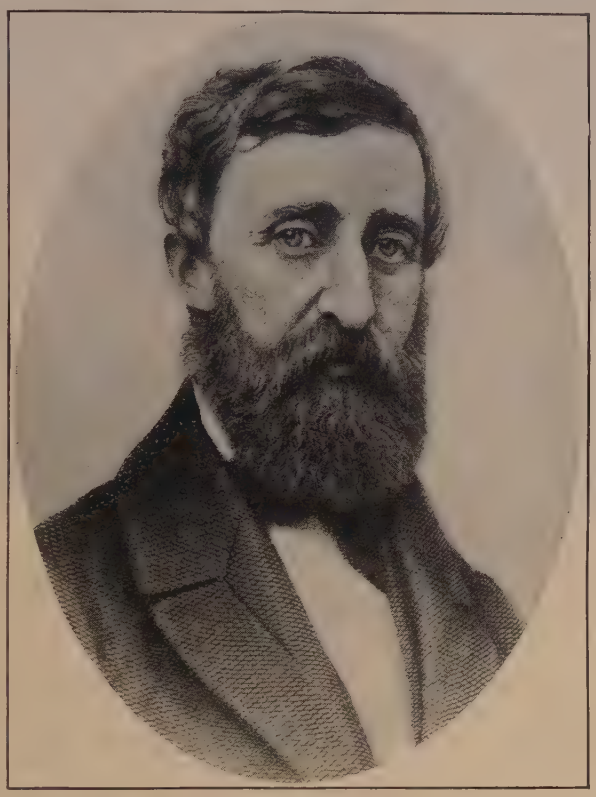
PORKY TAKES A RIDE

In many a stream and shallow pond the oar will hit strange things but not often a porcupine

Henry Thoreau *and his Journal*

by J. S. Wade

"Pray tell me who on earth would care to read Henry Thoreau's Journal!" asked Judge Rockwood Hoar, an eminent citizen of Concord, when told that there was some likelihood that the Journal of his fellow townsmen Henry Thoreau might be published. Incidents such as this are typical of the lack of appreciation of Thoreau on part of his neighbors. Indeed, as Carlyle has pointed out, there exists a curious twist in human nature by which genius is idealized when of some far-away land or of some former generation, but is treated with indifference when contemporaneous or in daily association. Over and again in history the children have reared monuments to the memory of those whom their fathers have stoned or have held in light esteem.



HENRY DAVID THOREAU, 1817-1862
A portrait of the Concord naturalist from an ambrotype taken in 1861

Henry David Thoreau, whom Channing fittingly called the "Poet-Naturalist," was born of Scotch and French extraction, in Concord, Massachusetts, July 12, 1817, and died there May 6, 1862. When only twelve years of age he made collections for the learned Agassiz who had just then arrived in America. So, already, the fields and streams, trees and flowers, and birds and insects of his beloved Concord were fast becoming "cabinets of rare knowledge" to him. Concord then was, as it is today, a small community pleasantly situated some twenty miles northwest of Boston, amid a pastoral country of rare beauty. This spot seemed to him to contain all of beauty and even of grandeur that was necessary to a worshipper of Nature. He considered Concord's resources along these lines to be practically boundless.

We are not surprised, therefore, to learn that his periods of absence from home comprised only such time as was spent in obtaining his degree at Harvard, a few later excursions to the Maine woods, the White Mountains, Cape Cod, Eastern Canada, a brief teaching experience at Staten Island, New York, and finally, a trip to Minnesota shortly before his death in a vain search for a climate more favorable to his health. His grave is in the beautiful cemetery at Sleepy Hollow, beside those of Emerson and Hawthorne.

After his graduation from Harvard in 1837 he was engaged for several years in school teaching and tutoring. He supported himself, however, during the greater portion of his life as professional surveyor, a work that gave him opportunity to study and delight in the manifold aspects of Nature. He lectured from time to time and the demand for his services in this capacity increased as he became better known. With no talent for money-making he knew how to be poor, and lived most of his life under very humble financial circumstances. When he must have money he preferred to earn it by manual labor such as surveying, then back to his studies and endless rambles in the fields and woods. He had a passion for the wild and was most happy when in solitude with Nature. Such hearts as his hold their fortunes within. They have liberty vast as the sky. Like birds that come and go, they enjoy the most valuable part of every domain, while they themselves live free and uncommitted. The world was full of poetic suggestion to him, and existed, to his imagination, for the uplifting and the consolation of human life.

Perhaps one of the most widely known as well as one of the most characteristic acts of his life was the working out of his Walden experiment. Part of his philosophy of life was to live in contemplation and simplicity as nearly as possible to Nature's heart, and from June, 1845, to September, 1847, he resided in a tiny hut erected by his own hands on the shores of Walden Pond, a small and very beautiful body of water on the outskirts of Concord. While there he devoted most of his time to natural history observations and writing, performing only such other work as was necessary to supply the necessities of life.

It was there that he wrote his first book "A Week on the Concord and Merrimack Rivers," an account of a river voyage taken some years before in company with a beloved brother whose untimely death left an ineffaceable scar on his sensitive heart. The book shows to admirable advantage the author's rare powers of description, gives abundant testimony to the minuteness of his observations of Nature, and contains some quaint digressions into transcendental and Oriental philosophy.

It was published at his own expense and proved a financial failure; needless to say, it has since been reprinted, and widely read.

Thoreau's second book "Walden, or Life in the Woods," also written at his woodland hermitage, proved more successful, and is today perhaps his most popular volume. It is now recognized as one of the most original and sincere literary productions, and one of the most genuine of woodland books. It contains an admirable record of his entire Walden experiment with elaborate statements of the underlying reasons therefor. As an admirer of Thoreau has well said: "Walden is one of the very few American books that should be reread every year."

For something over twenty-five years beginning with 1837, Thoreau kept with extreme care a record which he called his Journal. This comprised a careful and extended record of his daily excursions and observations, accompanied by a wealth of moral and philosophical meditations. At the time of his death the Journal comprised thirty-seven large closely written volumes; from these he had drawn the material for the two books already mentioned. After his death loving hands completed from the same storehouse the volumes entitled "Excursions," 1863; "The Maine Woods," 1864; "Cape Cod," 1865; "Letters to Various Persons," 1865; "Early Spring in Massachusetts," 1881; "Summer," 1884; "Winter," 1888; "Autumn," 1892; and, "Miscellanies," 1893. All of these were later issued in the "Riverside Edition." A new and complete "Walden Edition" of his works was published in 1906. The mere fact of such a happening after the author had been sixty-four years in his grave was highly significant of the steadily increasing interest in Thoreau's writings and eloquent of the permanent value of his work. Something of the extent of his observations may be gathered from the fact that his journal contains 2512 references to insects and 8433 to birds.

It is noteworthy that in all of his studies the interest was centered primarily upon human life. "Nature," he says, "must be viewed humanly if at all. A lover of Nature is pre-eminently a lover of man," and, "Nature is beautiful only as a place where life is to be lived. It is not beautiful to him who has not resolved on a beautiful life." While records of his field activities embrace a wide range of subjects in biology, geology, archæology, and allied topics, it was habitual for him to combine the ethical and the æsthetic with the scientific and purely literary. Notes such as these, now printed without revision, are not always free from defects, but minor blemishes can be overlooked in consideration of an otherwise brilliant demonstration of genius. Everywhere is evident the great care with which he wrote, as well as the sympathy and insight with which he treated his themes. His powers of description were such as to make him the envy and despair of a host of nature writers who have attempted since to follow in his steps.

ON THE SITE OF THOREAU'S HUT

A cairn to which every pilgrim lover of Thoreau's writings has placed a stone

It is a matter of deepest interest to examine some of the biographies of Thoreau and to note the varying interpretations of his character and philosophy as given therein, ranging from Channing, 1873; and Japp, 1877; to Sanborn, 1882; Salt, 1896; Marble, 1902; Sanborn again 1917; and, Bazalgette 1924. Among the essayists Lowell, Stevenson, Torrey, and Burroughs should be mentioned. Quite considerable space, especially in recent years, is being given to Thoreau in formal text-books and other similar discussions of American literature, and the list of such books and articles appears to be steadily growing.

In reading Thoreau's works the conviction becomes impressed upon one that he had a profoundly religious nature. He encountered everywhere the moral of Whittier's inscription on a sun-dial convinced that "There is light above us by the shade below." He was ever seeking, to use a modern phrase, to be "In tune with the Infinite." When he lay dying a friend asked him if he had made his peace with God. His reply, coming at that solemn hour, was characteristic: "God and myself have never quarreled." His creed was expressed in a letter to a friend: "I know that I am. I know that Another is who knows more than I, Who takes an interest in me, and Whose creature, and yet Whose kindred, in one sense, am I. I know that the enterprise is worthy. I know that things work well. I have heard no bad news."

EVERY *dog lover will want to read the article "The Heart of a Dog" that Ben Hur Lampman has written for the August issue. Marguerite Kirmse has illustrated it.*

Other features in the next issue include "Confessions of a Pet Lover", by Lorene Squire; "The Story of Waterfalls", by Charles Fitzhugh Talman; "The Heath Hen's Last Stand", by George Wilton Field, and several other outstanding articles.

Nursery Nature Tales

Being the Adventures of Toby and Beth, Two Very Little People in the Big World.

Wigglers

by Elizabeth K. Peeples

"Simple Simon went a-fishing
For to catch a whale
But all the water that he had
Was in his mother's pail,"

sang Daddy one May afternoon. In one hand he had a bucket, in the other an old saucepan. Toby and Beth trotted after him down the lane that led to the pond.

"Somebody else is singing too," said Toby as they neared the pond.

From all directions across it came sweet voices calling. The children listened quietly.

"Such dirty water!" objected Beth in a low tone.

"But see the cowslips and pond-lilies that grow here," whispered Daddy. "Go softly; we may see who's singing."

They tiptoed nearer. In the shallow water near the edge were dozens of little brown creatures, like lumps of earth, their throats puffed out like toy balloons as they sang.

"Just common toads!" Toby was disappointed.

"They have double chins," whispered Beth.

Daddy and Toby laughed aloud, and at the sound, splash! splash! splash! went the toads into deeper water, and swam away.

"Come," said Daddy, "now we'll go fishing."

In the shallow water along the edge of the pond the children could see long strings of something like gelatin with tiny black balls in them.

Daddy showed them how to scoop up the toads' eggs, for that was what he said they were. Toby and Beth took turns with the saucepan, and soon the bucket was half full of eggs and pond water.

"Won't the mother toads miss them?" Beth was troubled.

"Little toads take care of themselves," explained Daddy, "and besides each mother toad lays many eggs, thousands of them!"

Reaching home they emptied the eggs and water into an old aquarium.

"Who will sit on the eggs?" inquired Toby. "Their mother isn't here."

"The sun keeps toads' eggs warm," explained Daddy. "We'll put the aquarium in this sunny window."

Many times each day Toby and Beth watched it. In three days the eggs had changed to little tadpoles wriggling in the jelly. Two days later they were out of the jelly, clinging to the waterweeds Daddy had planted in the sand of the aquarium.

"How do they hang to the waterweeds?" Toby asked.

"They have sticky stuff where their mouths will be later on," answered Daddy.

("Mouths full of glue!" Toby was critical.)

Later they noticed that the tadpoles had tassels on their necks which Daddy said were for breathing.

Soon the tadpoles were real pollywogs, as black as bits of coal. Each day they moved about more and more, their small mouths in search of something to eat. Toby and Beth gave them fish food.

"Their poor tails must get so tired of wiggling," said fat little Beth.

"Why, our tadpoles have hind legs to help their tails swim!" rejoiced Toby one day.

"What big mouths, and big eyes they have!" he marveled a few days later.

Front legs came next.

And then the strangest thing of all happened! The wiggling tails began to grow shorter and shorter.

One day in July Daddy said, "We must put these tadpoles back in the pond."

As they turned homeward, hundreds of tiny toads hopped through the grass, and across the lane.

"They grew here in the pond," said Daddy, "and now they are setting out to seek their fortunes."

More Winners in Association's

Honorable Mention Prizes for Cartoons

UNWELCOME VISITORS

SEE YOU NEXT SUNDAY MOTHER OLD DEAR
LOOK FOR US SOON AGAIN
GOOD-BYE! AND MAY YOU NEVER COME BACK, WHEN EVER THEY VISIT ME I'D JUST AS SOON SEE A CYCLONE, IT'LL TAKE ME A WEEK TO STRAIGHTEN UP AND I'LL BET THEY'LL BE OUT AGAIN NEXT SUNDAY.
THE CIGARETTE YOU CAN'T FORGET
WEED MONT
WHEN YOU HIT TOWN STOP AT THE CASTORIA HOTEL
MOTHER NATURE.
NOT EVEN A DOG-WOOD LEAVE A PLACE LIKE THAT
CRACKERS
SARDINES
Dick Mansfield

So many excellent cartoons were received in the Outdoor Good Manners Cartoon Contest in the professional class that it was decided to award five additional honorable mention prizes of five dollars beyond the first three prizes announced in the June issue. The four cartoons on these pages and a fifth reproduced on the American Nature Association Activities Page of this issue have been awarded these prizes. All of these cartoons received at least one vote from the judges for second or third place, the vote having been unanimous for the first prize-winning cartoon.

Dick Mansfield, Washington, D. C., cartoonist, is the author of the cartoon, "Unwelcome Visitors". Note what the little duck in the corner says.

SEE TREE PLANTING ARMY PAGE FOR FORESTRY CARTOON CONTEST

THE "PICK-NICKERS"

What they don't pick, they nick!

Tom Culverwell of Washington, D. C., expresses the thought of the cartoon contest in a most impressive way in the cartoon at the right. His title is well-chosen, also.

Outdoor Good Manners Contest

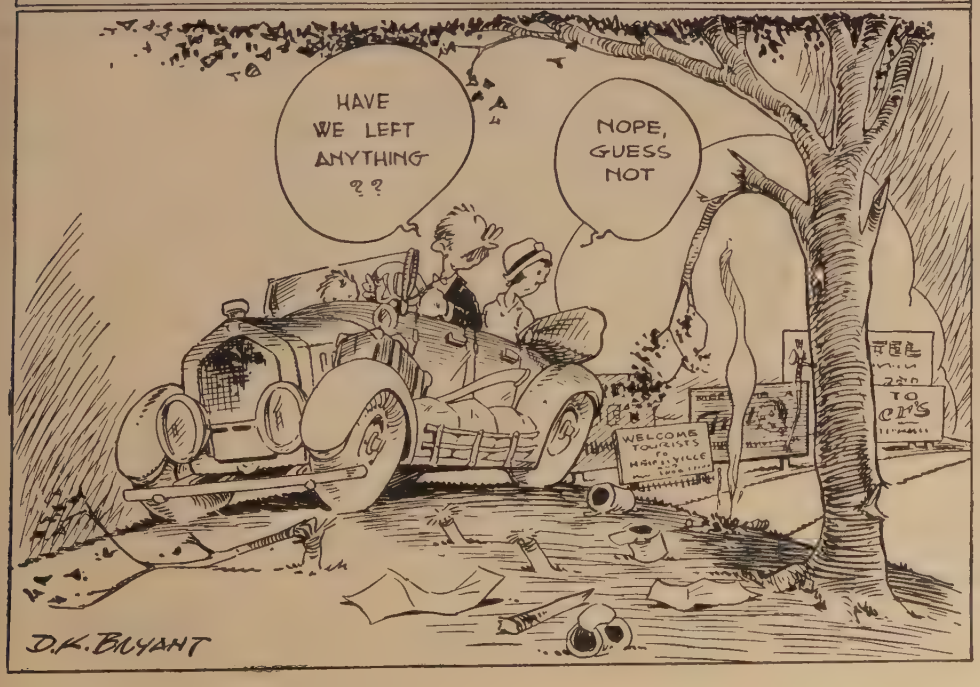
IN THIS space the officers of the American Nature Association and the editors of Nature Magazine wish to thank the contestants in the cartoon contest, both professionals and amateurs, for the extent of their cooperation and for the fine picture lessons submitted. The amateur contest has now closed and the results will be announced as soon as the judges have an opportunity to consider the large number of cartoons submitted.

ON the inside back cover page of this issue will be found the announcement of another cartoon contest. It will be particularly of interest to professional cartoonists and to amateurs with marked ability. This is a Forestry Cartoon Contest sponsored by the American Tree Association and by Charles Lathrop Pack, President of that Association and Chairman of the Board of Directors of the American Nature Association.

RETURN OF THE NATIVE

CARROLL WILLIAMS of Austin, Texas, submitted the cartoon above and it was given two votes for a place by the judges. The artist has combined many thoughts effectively.

LANDSCAPEGRACES



D. K. BRYANT, cartoonist of the Nebraska *State Journal* of Lincoln, is the author of the cartoon at the left. How many times have we heard the brief conversation reported therein!

ASSOCIATES

Prof. George R. Green, *President, American Nature Study Society.*

Prof. J. A. Hollinger, *President, National Council of Supervisors of Nature Study and Gardening.*

Mrs. Elizabeth K. Peeples, *of the Washington, D. C., Schools.*

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Dr. Bertha Chapman Cady, *Girl Scouts, Inc.*

DEPARTMENT of NATURE EDUCATION

Dr. E. Laurence Palmer

Cornell University, Director

Nature Education in a Camp Setting

July will see thousands of children getting their preparation for life through experiences in camps instead of in the more or less unnatural setting of a school room. There may be some value in suggestions as to how this may effectively be done and a little story of the way this type of education seems to be developing is therefore given on this page this month.

In the early days of camps,—that is, of formal camps,—Nature study accomplishments were frequently measured by the number and size of the collections which might be made and named from Nature. Such a procedure obviously resulted in the depletion of the wild life, particularly of the rare and interesting forms, from the vicinity of the camp site. Collections not infrequently were measured as being valuable by the rareness of the species represented in the collections. Thoughtful camp directors and Nature counsellors have for some time recognized that this making of collections is not profitable from the standpoint of enriching the experiences of campers who follow unless collections are limited so as not to include specimens which resulted in the death of the individual plant producing the specimen. A leaf and flower of a maple, for example, would not kill the tree while the leaves and flowers of an orchid might easily kill the orchid. Some camps encouraged the making of collections of weeds, but this has not always appealed to youngsters.

The making of individual collections was followed in camps by the building up of camp collections, which, of course, did not cause such wholesale destruction but still placed the life of the rare things in jeopardy.

Camp museums and camp zoos began to take the place of camp collections because it was found that museums with living samples offered greater attraction than museums with dead things. As one boy put it in a Boy Scout camp in Palisades Interstate Park, he preferred a "muzooum" to a museum because in the "muzooum" the animals were alive. The making of "muzooums" and Nature gardens, however, were mere make-shifts for seeing things in their natural setting and to counteract this the Nature trail idea was developed, taking people off through the woods and fields around a regular path to see things in their natural setting.

These trails have been of many kinds. Some have been instruction trails in which those following them merely learned about the things pointed out. Others have coupled with the instruction trails, trails that presented the things by number only, the numbers being attached to things like those which may have been given previously on an instruction trail. By this method a child could teach himself any number of trees or wild flowers that the instructor might care to set as a goal of accomplishment. The superiority of these trails for instruction purposes over the formal museum presentation is nearly as great as the superiority of museum specimens over picture collections. Many have developed the Nature Den Idea, having at the end of a Nature trail a more or less secret destination where were assembled unusually interesting things for those with initiative enough to follow the trail to see.

A new idea has been followed in some camps this last year. This involves neither museums, collections, dens nor trails. It consists of campers being provided with maps of the camp site. The campers themselves may make these if they wish. One map may be for woody plants, another for herbs, another for insects, another for birds and so on. At the camp Nature headquarters a bird map is kept, for example. On this map the campers indicate the location of various bird nests, only one nest of a species appearing. Campers reporting nests may get credits as seems desirable. On other maps the location of trees of different species is indicated, again only one of a kind being shown. At first, campers must find a number of trees to get a point and later a smaller number of course. The same is done with other kinds of Nature subjects.

If a visitor comes to camp and wishes to know about the wild flowers of the camp he may be presented with a map which will serve as a guide to where all the kinds known may be found. If you haven't tried this in your camp try it. It certainly will not result in the destruction of as many forms of life.

The American Nature Study Society *will meet with the Science Section of the National Education Association in connection with the annual convention of the latter organization in Seattle, Washington, July 5. Among the speakers will be Prof. Karl Hazeltine of San Jose State Teachers College; Frank Sipe of Oregon Agricultural College; F. W. Schmoe of Mount Rainier National Park and William L. Finley of the American Nature Association.*

BUFFALO AT WIND CAVE NATIONAL PARK
There are also buffalo at the state park, however, where they thrive like a herd of cattle

Animal Neighbors of the Summer White House

By E. H. Klock

Photographs by Stevens

ONE would not think, to look at the palatial residence that is to be the summer White House, that close to and surrounding it is an abundance of wild animal life. However, this castle, set down in a hidden nook of the great Black Hills, is in the midst of Nature in her primitive state, and nearby are being preserved specimens of all the wild species which once roamed that section of the state.

The Custer State Park comprises one hundred and eleven thousand acres of hills and mountains and canyons and creeks in their natural condition. The state of South Dakota was given this vast tract by the United States Government to be used as a state park. Attached to it are the Black Hills National Forest, the Harney National Forest, and the Wind Cave National Park. So one cannot wander or ride anywhere within a radius of many miles in the Black Hills without being in a natural park, or a special preserve. That means that much of the vegetable and animal life is preserved intact. The region is a naturalist's real, true playground—his study and workshop.

THE WHITE HOUSE FOR THE SUMMER
View of the Presidential home across the bridge that spans Squaw Creek

Across Squaw Creek, directly in front of the summer White House, on a hillside covered with native pines and stumps and splendid natural grasses, live a band of mountain sheep and a few mountain goats. These sheep—the Bighorn, like those in the picture on the cover of Nature Magazine for June—, are content and happy here on their native heath. It is quite difficult to get a good picture of them. However, these wary animals know the ways of man, and every evening and morning they come down out of their wooded, hilly stronghold to receive their regular rations of grain. President and Mrs. Coolidge can see them grazing on the hillsides as they sit at their dining table, or rest on the big veranda of the summer White House.

Out on this veranda is a piece of birch limb. It is sharpened bluntly at either end. At first it looks like the work of some woodsman, but on closer inspection shows the fine, sharp, smooth toothmarks of beavers.

This is a stick of wood that those wise little animals have cut. However, they did not chop this for the use of the President's home, but to be a part of a dam they were constructing up one of the many creeks in that neighborhood. There is one local creek

named in their honor—Beaver Creek.

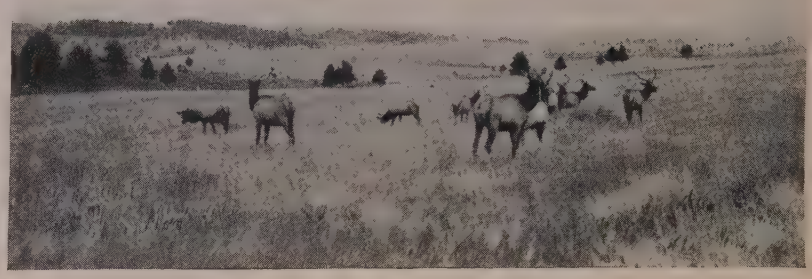
If the President is very quiet and careful, he can slip up one of these creeks near his summer home and watch the beavers at their work. Just how they learned to cut down trees in order to construct that dam of theirs, is one of Nature's mysteries. To see them gnaw limbs of the birch in two, and cut off pieces to use as chinking, is certainly a treat.

Old Bruin, who used to be hunted and hated, now roams through many of our national parks almost at will, and he and she and their cubs visit many a tourist's camp. So we find some of them at the state game park, and within a half mile of the summer White House. Most of the bears in the state park, however, are enclosed, and dens have been dug for them in the natural rocks.

Old Mr. Coyote is there, too; and also the bobcat. These were the natural dogs and cats of the earlier days in "The Hills". Some of them are at the "zoo" of the state game lodge, and will no doubt be the pets of the presidential party this summer.

Elk roam that section of the Black Hills in herds. Some of them are very tame. There is one, whose home is right at the summer White House, or in a pasture close to it, who was bottle-raised and brought up by hand by the Gideon family, who keep the lodge. This elk calf was discovered in a bunch of brush when very small, and evidently had no folks — at least, no relatives were found to claim him.

So the Gideon children adopted him, and brought him up at home. Because he was found during the World War, he was named "Woodrow Wilson." Woody became such a care that after a while he was confined to the big elk pasture with his kind. He would overturn every box and barrel, pail or other container on the place, or in the house, so he had to be put away. But he comes down to the corner daily to get his ration of grain or hay, and to chew gum with the children, or tobacco with the woodsmen who pass that way. "Woodrow Wilson" will undoubtedly be petted by President Coolidge this summer.



THERE ARE MANY ELK NEIGHBORS

Herds roam the great natural pastures that the beautiful Custer State Park affords

OLD BRUIN IS THERE

Most of the bears are confined in natural dens and natural zoos

Then there are the buffalo. Two giant heads of these woolly animals hang on either side of the front door to the summer White House. The herd in the picture live at the Wind Cave National Park, but there are buffalo at the State Park, too. Bulls, cows, calves—they live on and thrive like a herd of ordinary cattle. It is not very safe to try to milk one of the cows, however.

Birds of the East and birds of the West meet and mingle in the Black Hills. President Coolidge will awake to hear meadow larks though they differ from those that sang in his old New England homeland. At evening, he will hear the cheery song of robins. He will be able to see, soaring high in the clear blue sky of the Dakotas, the eagle and the buzzard. Hundreds of other kinds of birds dwell there; and thousands of wild flowers, of the most beautiful varieties, grow everywhere to gladden the sight of those privileged to live or visit near the President's Black Hills summer White House. And the President will find the fishing near the estate much to his liking.

A SCENE THE COOLIDGES WILL SEE

There are many mountain sheep and the President and Mrs. Coolidge can see them from their veranda

The FIRE-TOAD

by Doris M. Cochran

A QUARTET OF FIRE-TOADS
Viewed from above they are inconspicuous but once in action they are a joy to own

WHEN one thinks of keeping an aquarium, one usually pictures a glass jar with shining fish wending their graceful path through green water-weeds, and perhaps a snail or two assiduously scraping algæ off the glass, and a pollywog rolling around from corner to corner like an aimlessly animate gum-drop. But it is sometimes pleasing to have a different sort of inhabitant to watch and study. The European fire-toad is my choice!

The fire-toad, *Bombinator igneus,* is always a most amusing and charming pet, provided that one is able to give him just the proper sort of surroundings in his aquarium. He is an aquatic animal, and must have several inches of water in which a thick growth of pond-weed is maintained, the matted leaves coming just below the surface of the water. There should also be a heap of stones rising above the level of the water.

The natural foods of the fire-toads are the many kinds of small insects that live on the water-plants growing at the surface. A very good substitute for these may be found in very small pieces of lean raw beef, dangled enticingly with blunt forceps close to the end of the toad's nose. He will seldom refuse so tempting a meal. An occasional fly will arouse his enthusiasm but beetles and mealworms are too hard for him. The whole secret of feeding toads or frogs successfully in captivity lies in having food which is moving.

Very soon after the toad is installed in his aquarium, he will become tame enough to know the person who feeds him, and will come hopping across the weeds to eat. The top of the aquarium must *always* be kept tightly screened, or the toad will get out to go exploring, with disastrous results.

The fire-toad loves to converse, or so it seems. When two persons are talking near the aquarium, pretty soon a small piping voice will join in, now and then. The fire-toad's note is faint but quite musical, and two of mine occasionally sing an involuntary duet.

When you see this little creature at rest, idly floating with hind legs outspread at the top of the aquarium on some tangled water weeds, you see a dusky olive-green frog with no peculiar or striking features in evidence. If, however, you put your finger on the creature's head, or frighten him ever so little, you will see a vigorous movement of the legs, and as he dives you will be conscious of a bewildering pattern of brilliant orange and yellow set off with black trimmings. If you examine him more closely, you will see that, while the animal's back is a dull and unobtrusive brownish-green which harmonizes well with the mud-colored water weeds in which he usually rests, the whole under surface of the body is brilliantly marked with vivid fire-colored spots, strikingly brilliant on a jet black ground. Even the palms of the hands and the soles of the feet are marked in this way. It is said that the fire-toad when at home in his native pond, if pursued by an enemy, will turn suddenly over, and show the bright surface uppermost, and the enemy, puzzled by the sudden transition of the brownish creature which he was pursuing into this odd and confusing mass of bright spots, is often at a loss to know what it should seize.

AT THE WATER'S TOP
They will often lie hours motionless, only their eyes above the surface

IMMIGRANT FIRE-TOADS
These three came from Europe packed in a box of wet sphagnum and now thrive

A Semi-double Wild Rose New to Botany

by C. H. Robinson

Botany books tell us that the wild or native roses have but five heart-shaped petals and until the blooming season of 1924 I had no occasion to challenge it. For many years I have spent week-ends in the sand dunes of Indiana around the southern end of Lake Michigan. In June, 1924, I discovered in a small valley between two high, sparsely forested sand hills, a colony of a hundred or more wild rose plants in full bloom and differing from any others in a region where wild roses are abundant and varied.

The plants were dwarf and delicate; the stems where they emerge from the ground are not as thick as a lead pencil, and seldom more than a foot high. The old stems were of a brownish-green color with a few weak and scattered prickles. There were usually five,—occasionally seven,—leaflets, dark green, very small and sharply toothed. There were one to three stems from the root, very little branched; the flowers were few and solitary, but large—about two inches across and bright magenta-pink in color. Each flower had thirteen petals, round at the top and arranged in two rows, seven in the outer and six in the inner row, lapping like shingles on a roof.

"CAPTAIN ROBINSON" WILD ROSE

Discovered in the Indiana sand dunes and found to have thirteen round instead of five heart-shaped petals

Digging about the roots, I found they propagate by sending out horizontally about two or three inches under the surface, slender roots about the size of a lead pencil. At from one to three feet in distance these send up one to three stems, and one or two horizontal roots radiate from these points to send up plants. There are also a few long, slender, fibrous roots extending downward. The soil in the valley is a couple of inches of very sandy loam and then pure sand to a great depth. Last fall I obtained a few hips; small, bright scarlet, and nearly globular, but with a small projection at the stem. There were three to five small seeds in each.

The American Rose Society, to which I had sent pressed specimens, and very detailed description, requested me to apply for its registration as a new horticultural variety. The executive committee, having become satisfied that it is a variety not before reported, admitted it to registry and gave it my name —"Captain Robinson".

NATURE NEWS AND VIEWS

The Prettiest Bird

Twenty-nine different kinds of birds were selected by the rural school children of San Diego County, California, in the prize contest for essays on "The Prettiest Bird in San Diego County and Why I Think So", says the bulletin of the San Diego Society of Natural History. The hummingbird family received 15 votes, the meadowlark 12 and the oriole family 11. Mr. W. H. Sallmon of Chula Vista was the sponsor of the contest and is to back one for the children in the city schools.

A Faithful Albino

Some time ago we recorded the fact of an albino robin annually a resident of Annapolis, Maryland. Major John D. Marston calls our attention to the report that this faithful citizen has returned to Annapolis for the fifth consecutive year. Stroller, writing in the Annapolis *Evening Capitol,* says, "The marvel of it is that a bird with a head no bigger than a peanut should be able to find its way back to this spot over a thousand miles or more of land and water, and do it again and again. But perhaps birds have more intelligence than most people give them credit for."

Poster Contests

Another successful poster contest directed against billboards and other desecration of the outdoors was conducted this year by the Contemporary Club of Englewood, N. J. The posters were all made in the art classes of the high school under the instruction of Lillian A. Boyd and exhibited in a store window. A ballot box was placed inside for votes and more than 500 ballots were cast. Edith Woodruff won first prize; Milicent Wylly second; Marie DeBus and Aina Ullberg, honorable mention.

The Clifton Forge (Va.) Women's Club inaugurated a similar contest and Miss Eva Tatum reports that it aroused much interest and appreciation of the subject among the school children. The outstanding posters were made by Gaynelle Acord, Woodrow Vest, Ben Snapp and Ruby G. Brewster.

Under the auspices of the Women's Club of Sheboygan, Wisconsin, a contest produced several excellent posters, the outstanding ones by Robert Graefe and Ida Swanson. Mrs. Harry E.

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SHILOH GARDENS, *Box 650 Omaha, Neb.*

Thomas was in charge of the work.

Some superlatively good posters were sent in by Miss E. C. King of the East High School, Green Bay, Wisconsin, testifying to excellent art instruction in the schools of that city. The outstanding posters were by Francis Honish, Ray Robinson, Joanna Yusarak, Bernice Gazette, Mabel Hoyler, Frances Paque, Edward Nelson, Vivien Lindner, Marie Henklemann, Hattie Neklewicz.

A Happy Captive

In Massachusetts the robin is a protected bird and it is against the law to keep it in captivity. Mr. O. F. Lawton, City Forester of New Bedford, calls our attention to an exception to this law prevailing in his city. A bird lover discovered in one of the birdhouses in Buttonwood Park a robin, and quickly protested. Immediately an investigation was started and then the robin's,—his name is Bobbie,—story came out. He was rescued when just a hungry and featherless little fellow from some thoughtless small boys and nursed into young birdhood by Mr. and Mrs. Frank D. Mont. Finally, however, Bobbie became quite a problem around the house but was not versed in the ways of the hard world so he was taken to the park birdhouse. There he holds the honors as the sweetest singer, is friendly with one and all and wouldn't be free because he doesn't know freedom.

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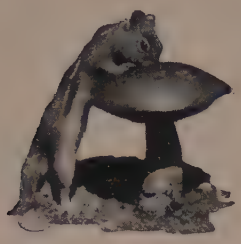

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Your club will enjoy them.

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California Invites

Southern California is one of the country's beauty spots and playgrounds and no doubt many members of the American Nature Association will wish to take advantage of an offer proffered by the Automobile Club of Southern California. The Outing Bureau of this live organization, which is located at Figueroa and Adams Streets, Los Angeles, will send to any member of the Association a leaflet on the outdoor recreation facilities of Southern California, a map of the main automobile roads of the United States and a map of the golf courses of Southern California. Information about reaching this section will also be furnished free by the Touring Information Bureau of the Club.

Palacios Propaganda

One of our members sends in an advertising sheet sent out by the Chamber of Commerce of Palacios-by-the-Sea, Texas. He does so with the notation, "note the 'bad eminence' of which this Texas town brags", which aptly alludes to a half dozen pictures of the familiar type showing intrepid hunters proudly displaying masses of dead waterfowl. A smaller picture shows the live birds calmly floating on the surface of the water, making one wonder how much sportsmanship was involved in the kills exhibited. Judging by these pictures, the visitors and residents that this community hopes to attract by its circular will find Palacios quite bereft of wild life.

Poster Contest

A successful anti-billboard poster contest was held in the Wallingford, Connecticut, high schools under the auspices of the General Federation of Women's Clubs, reports Mrs. R. F. Miner. Several effective posters were executed and prizes awarded, the posters being exhibited in a store window for a week as a part of the work of public education. Mrs. Miner has kindly sent the posters to the American Nature Association to be considered as possible entries in the Association's Cartoon Contest.

Parks and Nature

Hearty indorsement of the use of natural parks as centers of Nature study was given in a resolution adopted by the National Conference on State Parks at its seventh national conference held in the Palisades Interstate Park. The resolution pointed out

The beautiful Yellow Brazing Star

See Flowers Grow *in* MOVIES

HERE, in a new way, the magic of motion pictures is brought home to all Nature lovers. On a wall or screen *in your own home* see real flower buds swell, burst and bloom. You only require a Bell & Howell Filmo automatic Projector and these new flower films recently added to Filmo Library. The photography is by A. C. Pillsbury, noted naturalist of Yosemite National Park, California. It is painstaking and marvelous in every respect. Write address below for full information on "Pillsbury Flower Dramatics."

Ditmars Living Natural History

Another feature of Filmo Library is the series by the famous zoologist, Raymond L. Ditmars. The life and habits of birds and animals now available to you in your own movies. Write for illustrated circular on "Ditmars Living Natural History."

Take Filmo Movies *of Your Own*

AND for all the out-of-door activities you engage in record the interesting action *for yourself* with Filmo automatic camera. Easier than taking snapshots. No special skill required. Simply look through the spy-glass viewfinder, locate your action and press the button. First cost of film includes developing and postage to your door. Then show your movies at home with Filmo Projector. The descriptive booklet, "What You See You Get," tells the whole interesting story. Write for it.

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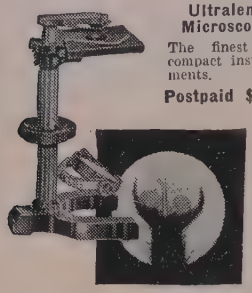

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THE ALL 'ROUND SPORTS' GLASS

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See Inside Cover
for
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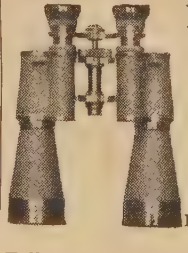

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that "much of the damage done to state and other parks by the visiting public is due more to ignorance than to a malicious spirit," and the Conference went on record as urging "the importance of public education in natural history as a vital factor in conservation."

Particular emphasis was placed by speakers on the value of state parks near large cities as antidotes to some of the unfortunate results of congested urban existence. Their value is not alone physical but sociological, it was pointed out. Authorities in all states were urged to make a thorough survey of area susceptible to park use.

Stephen T. Mather, Director of the National Park Service, was elected chairman of the Conference, and Col. David C. Chapman of Knoxville, Tenn. was chosen vice-chairman. Miss Beatrice M. Ward was re-elected as executive secretary.

A Forestry Program

As their contribution to the spirit of Arbor Day, forty staid business men of Medina County, Ohio, planted 12,000 forest trees at Camp Crag, the summer camp of the Medina County Y. M. C. A. This marks the beginning of a five-year reforestation project sponsored by the Kiwanis, Rotary, and Lion Clubs, and the Fish and Game League of the County. From 35 to 40 acres will be reforested during this period, under the supervision of the Extension Forester of the State Forestry Department at Wooster. Under the direction of L. J. Leffelman, Assistant Forester of the Department, a four-acre planting of Scotch pine and Norway spruce was made this year, and a forest nursery established containing 10,000 red, white, and Corsican pines.

Good Times Club

In Janesville, Wisconsin, there is a live and public spirited newspaper, the *Janesville Gazette*. Its slogan is that it is "The Biggest Newspaper of Its Size in America". We haven't taken time to puzzle out how big that is, but we do know that it is big in vision in one direction,—that of community service. In 1922 the newspaper organized a Community Service Department and sponsored the formation of Good Times Clubs among boys and girls to aid them in their recreation and to make that recreation valuable to them. One of the directions taken under the community editor, Florence S. Hyde, has been Nature study and Nature appreciation. Now the newspaper has

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brought out a Recreational Manual that is unique in character and filled with fine suggestions along varied lines of recreation. It was written by Miss Hyde and within its 64 pages has a wealth of material valuable to anyone engaged in community work. It sells for one dollar and can be ordered from the newspaper.

Zululand Bird Refuge

It is some time since we have heard from our fellow member, Major F. Vaughn Kirby, chief game warden of Zululand, South Africa. It will be recalled that Major Kirby called upon the members of the American Nature Association for help in achieving more adequate wild life protection and that the response was of material assistance to him. Now Major Kirby writes:

"You will be interested to know that I have recently been successful in obtaining government sanction to the establishment of the first wild bird sanctuary in South Africa. I have been away some weeks defining and beaconing boundaries. The great St. Lucia Lake, as well as False Bay are included in the area, as well as substantial stretches of heavy forest country, thus benefiting innumerable species of land birds and the wonderful collection of waterfowl which is found on the lakes."

Cats Taboo

Dr. George F. Hermann, Sr., of Cincinnati is an ardent lover of birds and small mammals and recently purchased some one hundred squirrels of different species to make their homes in his trees. Doing so, he appealed to his neighbors to join him in restricting roving and unregenerate cats and dogs, at least until the newcomers have gotten acquainted and established homesites. In this connection it is well to remind cat owners that one of the worst enemies of the birds is the owner of a cat who leaves the unfortunate feline to fend for itself and goes thoughtlessly away for a summer vacation.

Watertown Park Zoo

Seven years ago four enthusiastic Nature lovers organized a club which they called the Park Zoo Club, its purpose being to establish a zoo in Thompson Park, Watertown, New York. This was an immense project for eleven year old "kids" to undertake but they were fairly overflowing with enthusiasm. As a result Watertown today boasts of an unusually interesting little zoo. Since their organization,

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Str. Greater Detroit
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First class accommodations exclusively. All water sterilized. Autos carried. Radio and moving pictures on both the Buffalo and the Mackinac Divisions. On the Mackinac Division there is also dancing, with hostess in charge, afternoon teas, bridge, golf, horseshoe pitching, etc. Tickets on this Division limited to sleeping accommodations.

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4 sets of 6 from Feb., May, July, and Sept. Nature Magazine, 12 cents per set; $10 per 100 sets.

Outlines for Children to Color

12 cents per doz., 75 cents per 100. 10 cents each for 25 or more Jr. members brings button, pledge, 6 outlines, for each; 12 color plates and periodical for organizer.

Plant Wild Flower Seed

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Soil testing sets for gardens, $2.25.

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Protect the song birds—don't let the sparrows drive them away! An Everset Trap—costing $5 delivered—is the simplest and most effective way to get rid of them. Costs nothing to operate, small grain or bread crumbs are used for bait. Requires no setting, always ready. Nothing to get out of order, lasts indefinitely. Average catch, 20 sparrows a day. Write for full information.

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the Club has earned over one thousand two hundred dollars and purchased bear, fox, 'coon, muskrat, monkeys, coyotes, 'possum, skunk, mink, magpies, wildcats, alligators, ocelot, owls, and macaws. The latest addition which has aroused great interest, is a young, tame bull moose!

All funds are raised by holding carnivals, rummage sales, card parties, food sales and by selling old paper and other junk which the members collect. Every cent is earned only after hard earnest work on each member's part. The main purpose for establishing this zoo has been to create a greater sympathy of the public for wild life by reason of an increased familiarity and understanding; and the Club feels that bringing them in closer association with each other will prove most beneficial to both. Thus it is possible for people to learn a great deal about various animals. An example is the shedding of the deer's antlers and the inability of the porcupine to throw its quills. It is astonishing to know of the great number of false stories about our wild life which are accepted by the public without question!

R. J. FAIRBANKS

Thanks, Mr. Payne

It is always enjoyable to have other people say nice things about one. In the Cincinnati *Times-Star*, Mr. George M. Payne conducts a helpful and interesting column in which he briefly reviews current magazines of worthwhile character. In reviewing the June issue of Nature Magazine, Mr. Payne particularly features it, and closes his notice by saying that "this will give you only a taste of the delightful things to be found in this delightful magazine, a beautifully illustrated and printed periodical!" Thank you, Mr. Payne.

Conditions for Nature Study

M. R. Van Cleve, Supervisor of Nature Study in Toledo, Ohio, goes on record as follows, regarding organization necessary for effective Nature teaching,—"In my judgement, elementary school science can be well done only in platoon systems with special teachers, or by a large corps of special teachers who go from school to school. Little can be expected of the regular classroom teacher without Nature rooms, equipment, or adequate time allotment. We are fooling ourselves to think any worth-while instruction can be given under such conditions."

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Lantern Slides

A representative series of lantern slides, stereographs and flat pictures of the trees of California has been brought out by the George E. Stone Laboratories, 1367 Post Street, San Francisco, California. Other slides and stereographs available include California wild flowers, marine life views and other Nature subjects. Members wishing additional information about this material can obtain it by requesting a catalogue from the address given.

Wild Flower "Ace"

C. M. Shimpan, President of the Burroughs Nature Club of Cleveland, Ohio, reports on a prize contest for the identification of wild flowers held among the students of Andrew's Institute. Before a class of fifty, one hundred pictures of wild flowers were shown on the screen for eight or nine seconds each. The students wrote down the identification and number as they were shown. Miss Jean Gibbs of Geneva, Ohio, made a perfect record, a second student named all but one and a third scored 97 out of the hundred. The prize awarded to Miss Gibbs was a membership in the American Nature Association and *Nature Magazine* for one year. The Association congratulates Miss Gibbs.

Hoosiers, Join Up

We have frequently called to our attention the fact that the Nature Study Club of Indiana is a live organization and a fine meeting place for Nature lovers. Every month the club's bulletin comes to our desk and we envy the members the fine programs that are worked out. If any of our active members in the vicinity of Indianapolis have not gotten acquainted with the club we feel they are missing something. The secretary, Miss Margaret R. Knox, 701 Inland Bank Building, Indianapolis, will be glad to get in touch with Hoosier Nature lovers.

Traveling Nature Exhibits

Miss Violet L. Finley, Supervisor of Nature Study in Wilmington, Delaware, presents the novel idea of a "Traveling Nature Library." A stuffed crow, presented to the Nature Study Department by the Society of Natural History, was placed in a hat box, along with an envelope filled with pictures and printed matter concerning crows. Any teacher in the Wilmington schools was permitted to borrow the outfit for one week. From this beginning the "Library" has grown to fifty such boxes.

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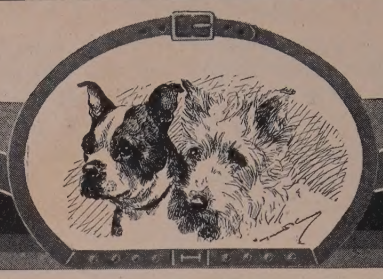

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PRIZES *for* CARTOONS

American Tree Association offers Awards for Best Cartoons on the Importance of Forestry

PUBLIC education as to the importance of the forestry issue is one of the most essential means of meeting this problem. A people awake to the terrible waste of forest fires, to the need of rebuilding our forest assets for the future, and to the necessity of providing adequately for forestry research and experiment has the greatest insurance against forest poverty for the generations that are to come.

To achieve this public education has been the central part of the work of Charles Lathrop Pack and of the American Tree Association, of which he is president. As a detail of this work Mr. Pack has, for example, printed and distributed free to schools, organization and individuals, one and one-half million copies of *The Forestry Primer*, a simple and fundamental story of the forestry problem. The American Tree Association has, also, carried the message through the written word in a variety of other widely-circulated pamphlets and publications.

Now the American Tree Association announces a program which will result in producing the story of the forestry problem in one of the most effective ways known to our present-day life,—through the pen of the cartoonist. These men, with their telling drawings, have greatly influenced many events and trends in our political and social world. Many of them have turned their genius to the forestry issue and now another opportunity is offered.

For the cartoons *best expressing the importance of the forestry problem with relation to diminished supply, deforestation, forest fire devastation and waste of forest resources, and setting forth the need of rebuilding the forest assets of the United States,* seven substantial prizes are offered.

The first three prizes are $250, $100 and $50 respectively, with four additional prizes of $25 each.

A distinguished board of judges has consented to pass upon the cartoons and to select the seven winning ones. This board consists of J. N. Darling (Ding) noted cartoonist of the *New York Herald-Tribune;* Colonel William B. Greeley, Chief Forester of the United States Forest Service; Dr. John T. Finley of the New York Times; John Hays Hammond, eminent international engineer, and Mrs. Mary K. Sherman, President of the General Federation of Women's Clubs.

There is no restriction on the number of cartoons submitted by any contestant. Anyone who can tell a story effectively in a cartoon suitable for newspaper reproduction is invited to enter the contest. The size is not restricted, although the adaptability of the original to reduction in accordance with general newspaper cartoon practice should be considered by the entrant. Pen and ink is the most effective treatment.

All cartoons to be returned to the author should be accompanied by return postage. The closing date of the contest is December 1, 1927, and, if possible, announcement of the winners will be made about the 25th of January and in the February issue of Nature Magazine which is out on this date.

All cartoons entered in the American Tree Association contest should be addressed to *Cartoons,* AMERICAN TREE ASSOCIATION, 1214 *Sixteenth Street, N. W., Washington, D. C.*

FELLING THE TREE — BY JOHN HIX

This cartoon illustrates how effectively the forestry question can be answered by the cartoonist

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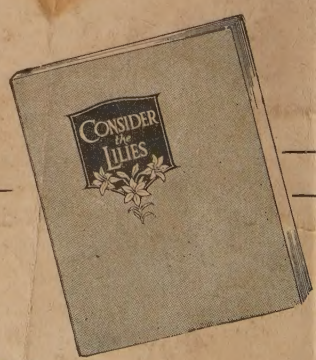

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